

This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

Educ 2019.09.5.2

✓

Harvard College
Library

By Exchange

Educ 2019.09.5.2

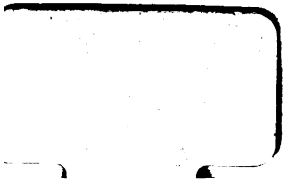
✓



Harvard College
Library



By Exchange



HABIT-FORMATION

BY THE SAME AUTHOR

THE LIGHTING OF SCHOOL-ROOMS. Longmans, Green, and Co. 1904.

THE PHYSICAL NATURE OF THE CHILD AND HOW TO STUDY IT. Revised edition. The Macmillan Company. 1905.

HABIT-FORMATION

AND THE

SCIENCE OF TEACHING

BY

STUART H. ROWE, PH.D.

HEAD OF THE DEPARTMENT OF PSYCHOLOGY AND PRINCIPLES OF EDUCATION, BROOKLYN TRAINING SCHOOL FOR TEACHERS, BROOKLYN, NEW YORK; LECTURER ON EDUCATIONAL PSYCHOLOGY, ADELPHI COLLEGE, BROOKLYN, NEW YORK

LONGMANS, GREEN, AND CO.

91 AND 93 FIFTH AVENUE, NEW YORK

LONDON, BOMBAY, AND CALCUTTA

1909

Educ 2019.09.5.2

HARVARD COLLEGE LIBRARY
BY EXCHANGE
DEC 13 1940

COPYRIGHT, 1909,
BY LONGMANS, GREEN, AND CO.

All rights reserved.

HARVARD UNIVERSITY
LIBRARY
JUN 06 1979

139614
MAR 2 19[illegible]
IKDE
'R79
'3

To

MY MOTHER

THIS BOOK

IS AFFECTIONATELY

DEDICATED

HABIT

So, then! Wilt use me as a garment? Well,
'Tis man's high impudence to think he may;
But I — who am as old as Heav'n and Hell —
I am not lightly to be cast away.

Wilt run a race? Then I will run with thee,
And stay thy steps or speed thee to the goal;
Wilt dare a fight? Then, of a certainty,
I'll aid thy foeman, or sustain thy soul.

Lo, at thy marriage feast, upon one hand
Face of the bride, and on the other — mine!
Lo, at thy couch of sickness close I stand,
And taint the cup, or make it more benign!

Yea — hark! The very son thou hast begot
One day doth give thee certain sign and cry;
Hold thou thy peace — frighted or frighted not —
That look, that sign, that presence — it is I!

— Margaret Steele Anderson.
American Magazine, September, 1907.

PREFACE

THIS book had its origin in an investigation, made several years ago, of the formative value of Latin and Greek. That inquiry resulted in the conviction that training in these languages owed its chief disciplinary merit to the habits engendered in connection with attention, rapid interpretation, classification, and contemplation of life from another's point of view. The absolute lack, however, of any systematic scheme of securing any particular habit was startlingly emphasized.

Subsequently, the writer made studies concerning various other phases of educational procedure. In each case the conclusion was reached that in none of the aspects of education investigated was there a scientifically established method of securing the habits sought. In the end it became evident that here is an extensive subdivision of methodology, the general principles of which have not been formulated, though educators past and present have united in insisting upon the fundamental importance of good habits.

The design of this book is twofold: first, to present in scientific form the relation of habit to education; and secondly, to treat the subject of habit-formation in a way that will render practical assistance to the teacher, the supervisor, the parent, and the clergyman. Their problem is not merely to impart ideas, but even more to form habits; for habit plays an essential part in the acquisition of knowledge as well as in the development of ability to contribute to the general welfare.

A formulation of method is needed in which this basic position of habit is duly recognized. The fact that there is a fundamental tissue of habits permeating ideational processes has been practically ignored in methods of instruction, while in methods of guidance or training the problem of habit-formation has been overshadowed by specific problems of mere management and control. It is clear, however, to the student of habit that thorough acquaintance with subject-matter — the aim of instruction — implies somewhat of habit and much of understanding, while the behavior sought in school management should imply some understanding and much habit. It remains to elaborate the mode of selecting habits, the conditions of making and breaking them, the vital phases of their formation, their relation to subject-matter and discipline, and the means of overcoming hindrances. These, then, are salient features of the present undertaking.

The real importance of general principles for the maintenance of discipline and for making effective all varieties of drill is too evident to need elaboration. Moreover, a recognition of these principles should simplify the problem of special method and school discipline, since each subject or form of training must to some degree at least contribute to the advantage of others.

From the practical side the need of a methodology of habit has been of late strongly evidenced. In two recent meetings of the National Education Association especial emphasis was laid on the drill side of education. But an abundance of drill or repetition does not necessarily produce the habits, intellectual or moral, which are desired. Such exercises conducted unskillfully often defeat themselves. A systematic and practical study of the subject should be helpful to superintendents and teachers alike.

For him whose time is very limited, the summaries of Chapters III, IV, V, VI, XI, and XIV may be substituted

for the text. If he is interested in the problem of habit-breaking, however, Chapter XI must be read.

Grateful acknowledgment is made to Miss Emma L. Johnston, Principal of the Brooklyn Training School for Teachers, for many suggestions and for active help in putting to the test of practice many of the principles here laid down; to Dr. J. Carleton Bell, my colleague, and Dr. Grant Karr for critical examination of the manuscript; to my wife for much valuable assistance; and to many others for helpful suggestions and criticisms.

TABLE OF CONTENTS

CHAPTER I

PAGE

THE TEACHER'S PROBLEM 1

1. Nature of education. 2. Definition of education. 3. Teaching and educating. 4. Relegation to the teacher of all kinds of training. 5. The primitive child's learning. 6. Definition of teaching. 7. The fourfold relation of the teacher to the child's environment. 8. The function of the teacher with regard to the child's experiences. 9. Typical differences in attainment. 10. Organization of experience the essential of progress. 11. The condition and limits of organization. 12. The mistake of modern pedagogy. 13. Summary.

CHAPTER II

DOMINANT MODES OF ORGANIZING EXPERIENCE . . 10

1. The narrower meaning of experience. 2. Experience as a psychological term. 3. Phases of experience. 4. Unlearned capabilities, automatic and purposive learning. 5. Two types of automatic learning. 6. A definite end necessary for all purposive learning. 7. The concrete as a factor. 8. The intermingling of ways of learning. 9. The effect of previous experience on purposive learning. 10. The teacher and the two ways of organizing experience. 11. Negative teaching. 12. Neglect of the automatic. 13. Five fundamental principles. 14. Summary.

CHAPTER III

TYPICAL FORMS OF ORGANIZED EXPERIENCE . . . 27

1. The variety of the child's experience. 2. Knowledge as a type of organized experience. 3. The error of neglecting the doing phases of experience. 4. The two marked

PAGE

types of organized experience. 5. Confused forms of organization. 6. Habit and memory. 7. The function of habit. 8. Seeking automatisms a fundamental of teaching. 9. A point of difficulty. 10. The combination involved in idea-habits. 11. The difficulty merely theoretical. 12. Practice in making the distinction desirable. 13. Automatisms involved in courses of study. 14. Summary.

CHAPTER IV

THE DIFFERENCE BETWEEN HABITS AND IDEAS . . 44

1. Nature and definition of idea. 2. Nature and definition of habit. 3. Philosophical objections. 4. A psychological objection. 5. Habit an automatism. 6. Habit as serial activity. 7. Habit as a preservative. 8. The disregard of detail and feeling. 9. The minimizing of attention and fatigue. 10. Habit as implying repetition. 11. Habit as specific aptitude. 12. The reflex and instinctive basis of habit. 13. Summary of the eight differences. 14. Principles of education involved. 15. Habit-getting as a sequel to idea-getting. 16. Transition of automatically gained ideas into habits. 17. Habits as precedent to ideas. 18. Summary.

CHAPTER V

THE BASIS OF HABIT 69

1. The development of habit from instinct. 2. The development of habit out of habit. 3. The nature of instinct. 4. Instincts important in training children. 5. Comments on useful instincts. 6. The overlapping of instincts. 7. Classification of instincts. 8. Three principles derived from the duration of instincts. 9. The two modes of modifying instincts or habits. 10. Principles following from the dependence of instincts on stimuli. 11. The child's basis of habits. 12. Summary.

CHAPTER VI

IMPORTANT PHASES OF ESTABLISHING HABITS . . . 85

1. The teacher's preliminary action. 2. Automatic preparation. 3. The four phases of habit-getting. 4. The formu-

PAGE

lations of James and Thorndike. 5. Other important formulations. 6. The subdivisions of the method of habit-getting. 7. These divisions not necessarily successive. 8. Summary.

CHAPTER VII

THE SELECTION AND DEMONSTRATION OF HABITS . . 95

1. Scope of the chapter. 2. Selection of subject-matter assumed. 3. Habit and incidental practice. 4. The analysis of the lesson into ideas and habits. 5. Complex combination of habit. 6. The complexity and difficulty of analysis illustrated (*a*) by a writing lesson. 7. (*b*) By drawing lessons. 8. The teacher's study of the habit. 9. Considerations for the study of the lesson in complex cases. 10. Illustration of the study of a complex case. 11. Suggestions resulting from the study of the arithmetical illustration. 12. Study of the stimuli of habits. 13. The study of the essentials of the reaction. 14. The study of habit as involved in spelling. 15. Demonstration of the habit to the pupil necessary. 16. Four important principles for demonstrating habits. (*a*) By concrete presentation. 17. (*b*) By using past experience. 18. (*c*) By preliminary mastery of difficult points. 19. (*d*) By leading the child to actual performance of the act. 20. Summary.

CHAPTER VIII

METHODS OF EVOKING INITIATIVE 120

1. The meaning of initiative. 2. Sources of initiative. 3. Self-activity as initiative. 4. Distinction between instinct and feeling, instinct and motive. 5. Threefold basis of the development of initiative. 6. What is meant by appeals to reason. 7. The use of instinct. 8. Instinct as a factor in getting erect writing posture. 9. The wide range of appeal provided by instinct. 10. Difference in the moving power of appeals to the same instinct. 11. Emotional incentives. 12. The value of a classification of feeling. 13. The classification of feelings. 14. Feeling and interest. 15. The verbal distinction. 16. The objective reference of interest.

PAGE

17. The three levels of interest and their twofold reference. 18. The usefulness of the classification of interest. 19. Direct and indirect interest. 20. Resulting satisfaction as a source of initiative. 21. The statement and illustration of the law of "resulting satisfaction." 22. The application of the principle of resulting satisfaction. 23. (*a*) Experimentation for initiative. 24. (*b*) Reënforcement of initiative. 25. (*c*) Testing and weighing initiative. 26. Motives as sources of initiative. 27. Motives as validated impulses. 28. President Eliot's emphasis of the permanent motive. 29. The development of motive. 30. Motives and appeals through reason. 31. The necessity of connecting initiative with the habit to be formed. 32. Adolescent initiative. 33. Judicious plying of initiative. 34. The preference of positive over negative incentives. 35. Summary.

CHAPTER IX

METHODS OF SECURING PRACTICE 159

1. Repetition the desideratum of practice. 2. The amount of repetition. 3. Thoughtful and earnest practice essential. 4. Relation between repetition and initiative. 5. The appointment of specified periods for practice. 6. Specifying the number of repetitions. 7. Furnishing abundant and agreeable stimuli. 8. Associating stimuli with the child's customary acts. 9. Practice as an outcome of environment. 10. Keeping in practice. 11. Decadence of neglected habits. 12. Need of actual not perfunctory practice. 13. The renewing of initiative. 14. A definite degree of skill or facility as an aim. 15. Effort as a factor in practice. 16. The direction of attention to special points. 17. Desirability of the method admitting of the most practice. 18. Psychological experiment and practice. 19. Summary.

CHAPTER X

METHODS OF PREVENTING EXCEPTIONS 177

1. The danger of exceptions. 2. The two sources of exceptions. 3. Need of studying tendencies to modification. 4. Reënforcement of uncertain initiative. 5. Removal of

PAGE

stimuli. 6. Fatigue as a stimulus to modification. 7. The reduction of stimuli. 8. The checking of variation. 9. The elimination of difficult points. 10. The use of inhibition. 11. The stimuli and motive of inhibition. 12. Guarding against probable temptations. 13. Warning against first tendencies to lapse. 14. Positive and negative initiative. 15. Resolving against lapses. 16. Preventing exceptions by combining positive and negative initiative. 17. Use of concrete reminders. 18. Picturing painful consequences of lapse. 19. Making painful experiences effective. 20. Natural and artificial punishments. 21. Promoting self-criticism and self-testing. 22. Two cautions. (*a*) Don't nag. 23. (*b*) Don't expect a child to distinguish automatisms. 24. Summary.

CHAPTER XI

METHODS OF BREAKING HABITS 200

1. Misconception of the function of habit. 2. The origin of bad habits. 3. United effort of home and school necessary. 4. Relation between habit-forming and habit-breaking. 5. Nature's way of breaking habits. 6. Habits formed unconsciously. 7. The necessity for confidence of success. 8. The situation to be met in habit-breaking. 9. The removal of stimuli. 10. The interruption of the reaction. 11. Selection and combination. 12. Bad habits as lines of least resistance. 13. Need of offsetting advantages in substitute habits. 14. The overcoming of inherent difficulties. 15. Advisability of attacking one bad habit at a time. 16. The substitution of a counter habit. 17. Danger in substituting undesirable habits. 18. The possibilities. 19. Emphasis on preventing exceptions. 20. Relation of breaking habits to the methodology of forming them. 21. Initiative for breaking habits. Positive initiative. 22. Special incentives to inhibition. Negative initiative. 23. The double use of initiative. 24. "Will-power" as initiative. 25. The association of initiative with the stimuli. 26. The association of the initiative with the reaction. 27. Initiative and inhibition as related to the reaction. 28. Practice and habit-breaking. 29. The obstruction and counteracting of stimuli.

PAGE

30. Importance of variations. 31. Variations related to the stimulation. 32. Variation and the reaction. 33. Natural *versus* artificial variations. 34. Dangers of injurious variation. 35. Preventing lapses *into* the old habit. 36. Need of nice judgment and study of individual cases. 37. Application to a concrete case. 38. (*a*) The study and demonstration of a concrete habit. 39. (*b*) The calling up of the initiative. 40. (*c*) The practice of a good carriage. 41. (*d*) Preventing lapses into the shuffling gait. 42. Summary.

CHAPTER XII

HABIT-FORMING AS APPLIED TO SCHOOL DISCIPLINE . . 235

1. Meaning of discipline. 2. Important school habits. 3. The complexity of school habits. 4. Additional habits involved in moral training. 5. Development of habits of service. (*a*) Analysis and demonstration. 6. (*b*) The initiative of service. 7. (*c*) Practice and habits of service. 8. (*d*) The prevention of exceptions. 9. Meaning of the term "general habits." 10. The possibility of common elements. 11. The possible common method of procedure. 12. The extension of habit by variation and suggestion. 13. Other arguments for general habits. 14. The teacher and general training. 15. Protracted habit-formation. Special cases. 16. The importance of a systematic scheme. 17. Summary.

CHAPTER XIII

HABIT-FORMING AS APPLIED IN DRILL 257

1. Drill more specific, less protracted. 2. Meaning of drill. 3. Habits involved in the course of study. 4. Habit-forming *versus* informational subjects. 5. Reading. 6. Composition. 7. Penmanship. 8. Arithmetic. 9. Music (singing). 10. Drawing and other forms of manual training. 11. Natural science, geography, history, and civics. 12. High school subjects. 13. Unconscious repetition in drill. 14. Summary.

CHAPTER XIV

PAGE

CONCLUSION 277

1. The limitations in application. 2. Habit-formation and the lesson period. 3. A criterion for experience. 4. Over-habituation. 5. The future scientific study of habit-formation. 6. Summary.

APPENDIX 285

BIBLIOGRAPHY 287

INDEX 301

HABIT-FORMATION

CHAPTER I

The Teacher's Problem

"Effective power in action is the true end of education."
— Eliot.

1. **Nature of education.** — Education is a broad term. It involves growth and, so long as this leads to greater efficiency, growth of any kind. It is not restricted to the sort of growth that takes place in the schoolroom or with the aid of the tutor, — the library, the church, the street, the theater, the symphony are alike educative. The process by which a person gradually falls into the ruts of habit and fossilization is not necessarily an educative process. Education implies increased power, facility, knowledge, skill, and at the same time the disposition to use these for the good not only of the individual but also of his associates, his country, and even of his age in so far as capacity and opportunity fit him for service beyond his immediate environment.

The college graduate who returns to his native town with bad habits and lowered ideals may have added to his knowledge and skill and even to his power and facility in certain directions, but he is trained rather than educated, if his college years have resulted in a real decrease in his ability to serve. His teachers may even have conferred upon him a degree, but he is not educated so long as there are gaps in his attainment likely to interfere seriously with his final efficiency.

2. **Definition of education.** — Education is most satisfactorily defined in terms of its aim which in turn must be

derived from the end of man as determined by ethics. This has been stated in the perfection-theory of ethics as "the realization of the highest self." In a social environment this "realization of the highest self" consists in contributing the highest service that it is possible for the individual to render that environment. Nor does this imply any silly self-obliteration. The individual has his own definite value to society both actually and potentially, and therefore the need of the individual is one of the needs of the social whole. Dr. Arnold Tompkins well illustrated the over-emphasis of the altruistic point of view in his reference to the two jewelers whose stores located across the street from each other started to burn simultaneously. Since each ran to the store of the other instead of rescuing his own stock, their altruism resulted in an avoidable loss to both. The student in particular should appreciate the fact that, as a student, he best serves society by furthering his own development, in so far as this fits him for service of wider scope. Education, then, is the process by which an individual develops toward the highest service possible for him.

3. **Teaching and educating.** — Teaching, on the other hand, is a much narrower term. Only by analogy can we speak of the street, the library, or even the college as a teacher. In education the center of interest is in the organism to be developed; in teaching it is shifted to the activity of the developer. This is so true that during many periods in the history of civilization the child has been well-nigh lost sight of in the emphasis upon the teacher's method. The process has been considered without sufficient consideration of its beginning or end. Our present interest in child-study represents a wise reaction due to the recognition of the one-sidedness of our former point of view; and, as the fervor of that movement sinks to a more

normal level, the individual is in danger of being lost sight of again, though the extended establishment of schools for defectives and special treatment for exceptional children have all been outgrowths of the child-study movement, which abundantly justify its enthusiasms. When the bright child, the only type for which no really satisfactory provision has been proposed, is suitably provided for, and when these adaptations to individuals of all types have been realized practically, even then teaching can be considered only one of the factors uniting in the process of educating.

4. **Relegation to the teacher of all kinds of training.** — Another result of the too exclusive focus on the teacher has been the tendency to expect him to furnish the youthful mind with all forms and kinds of training. The practical duties of the home, recreation, care of the health, and religious and moral training have too frequently been relegated to the teacher by parents who could offer far superior advantages at home to any the school could possibly afford.

5. **The primitive child's learning.** — In primitive life the race left the child to learn as best he could. Each factor of his environment contributed its mite toward his education. Now his father, now other members of the tribe, were imitated; his playmates, brothers, his mother, were busy about tasks or recreations, and he learned by watching them to engage in similar activities. Gradually, as civilization advanced, this hit-or-miss method was replaced by the appointment of a special person whose duty it was to see that certain definite things (and many of them) were learned. These definite things might vary all the way from holding the bow in his left hand and arrows in his right to the recital of the heroic deeds of his tribal ancestors, while what the boy of the

present has to learn varies from a way of holding the pen to a series of facts in the history of the United States.

6. Definition of teaching. — Anything known may be taught, not only knowledge apart from action but action itself. The child is taught both *to do* things and *how to do* them skillfully, *i.e.* unerringly, rapidly, or automatically. The teacher may so modify the environment of the child as to bring about situations that arouse feeling of one sort or another and tend to refine or direct his emotional activity. In short, teaching is the process by which a person possessed of a definite knowledge or skill guides another to the possession of similar knowledge or skill. This does not mean that a person may not lead the child to learn what the teacher does not know himself. But in that case the teacher teaches what he knows, and then sets the pupil to work out that which the teacher does not know and therefore, strictly speaking, cannot teach. In the meantime the teacher may also be learning, and thus become able to teach what he did not know before. No matter how significant or insignificant the knowledge imparted may be, it is still teaching, and without regard to whether it leads to greater or less efficiency.

7. The relation of the teacher to environment. — The teacher is then a factor placed in the environment of the child with a fourfold function. In the first place, he may add to that environment desirable features otherwise inaccessible. Secondly, he may emphasize features of the environment, which would otherwise escape notice or be only hastily regarded. Thirdly, he may forestall and remove undesirable features of the child's environment. Fourthly, undesirable elements of the environment, which are inevitable, may be slurred over with a passing notice or presented in their most favorable aspects. Teaching has, therefore, a definite, positive function.

8. The function of the teacher and the child's experiences. — As Professor Adams has pointed out, the verb *docuit* in the sentence, "Magister Johannem Latinam docuit," takes two accusatives. There is the boy taught and the subject or lesson that he is to learn. The nature of this something to be learned deserves a little further attention.

We often speak of it as if it had some separate existence. We speak of giving knowledge as we might of giving dollars. We ask the child if he has the idea as we might if he has a new hat. We hope that he may get a desirable habit, as we hope that he may secure some prize. We forget that what the child learns is a phase of his growth, and in forgetting this we lose much of the real nature of the learning process. The child gets experiences. He finds himself in real situations. He finds in one particular that it is pleasanter on the whole to act in this or that way, or in another to stop and think before he acts. He manages to remember somewhat of these situations, and in subsequent situations which are similar makes some use of his previous experience. He is or should be in better shape to meet the same situation the tenth time than he was the first. Even the good teacher is not he who never makes a mistake, but he who never makes the same mistake twice. *Humanum est errare, sed insipientis in errore perseverare.* What is the difference between the first and the tenth instance? Simply one of organization. Previous experiences in one case have been sifted or have sifted themselves; the most satisfactory or successful ways of dealing with the given situation have been noted; and this knowledge or ability has been turned to account in later cases where it did not exist in the first. This means that experiences have been organized, sorted, useless impulses have been thwarted, helpful ones have been reënforced and encouraged. One person pictures for a child the ocean

in a calm. Another, who has seen it in a storm, speaks of the big waves pounding in, the white foam, and the tossing of the big ship. The child asks his mother which is right. He gets through the answer an organization of his ideas of the sea which will help him in understanding future statements of that nature. Similarly, we ourselves say we "can't make head or tail out" of an obscure paragraph when we mean we can't *organize* it satisfactorily.

9. Typical differences in attainment. — If we examine children or grown persons who differ in what they have learned, we recognize certain types. One seems crammed with what is called information rather than knowledge, the distinction being that knowledge implies organization, while information may mean mere scattered scraps of knowledge. On the other hand, the lawyer noted for his keenness is one who not only has his knowledge organized, but also has definite (*i.e.* organized) ways of using it in getting at fine distinctions and discovering applications. Cleverness implies a somewhat similar but looser sort of organization, while brilliancy, like general quickness of action, refers rather to natural readiness to make and use organized experience than to any magical ready-made equipment.

In skill the gradual elimination of unnecessary and hindering movements, the discovery of little swings and twists assisting in the task imply organization. In accuracy the same organization is found. Executive ability, whether in the schoolroom or in the office of a great mercantile establishment, is almost a synonym for ability to organize. The training of teachers is an attempt so to organize the various kinds of knowledge and activity in teaching, that, given any concrete situation, the best possible use may be made of it.

10. Organization of experience the essential of progress.

— In all types of learning it is evidently the organization of experiences which is the underlying important element common and essential to all. In the realm of knowledge it implies classification, generalization, system, or orderly arrangement of ideas; in the realm of practical skill it implies automatic action, appointed times, places, and even ways of acting, — in a word, habit.

We thus see that the organizing tendency which has resulted in nations, the division of labor, the use of machines, and of late in our labor unions, big corporations, and political parties is a tendency to be counted upon and rendered effective in the child's development.

There are, however, so many useless and even hindering forms of organization that the child, if left to himself, is bound to waste much of his effort. With the aid of the teacher his energy is directed to channels of proved efficiency, resulting in an enormous increase in the effectiveness of his organizations.

Organization of experience is, then, the excuse for the existence of the teacher. The child would in many environments get a sufficient number of experiences; but if he is to profit by them, they must be of a useful character and he must be led to select here and combine there until he has so arranged elements of his experience as to make them yield the maximum of utility.

11. **The conditions and limits of organization.** — Nor are organizations taught for their own sakes; there would be no limit to the possibility of useful combination and selection except that set by memory. The organizations implied by scientific knowledge alone are far beyond the possibilities of memory processes, even though organizations so intimately connected are most easily remembered. Education, in so far as it makes its aim service, character-building, or efficiency, whether individual or social, necessi-

tates teaching that adapts itself to the definite and concrete situations of life. The object of that education must be enabled not only to gain a concrete understanding of the situation, but also to work out his own course of action in accord with the wisdom born of past experience, rendered fruitful, perhaps, by experimentation and purged by mistake and failure.

12. **The mistake of modern pedagogy.** — Modern pedagogy has shown a tendency to follow false gods and has sought the elusive general notion or the more definite practical skill, but nowhere has there been more than the faintest glimmer of recognition that the teacher's aim is always the organization of the child's experience, whether that experience is made up largely of sense impressions, of thought elaborations, or of muscular movement. By no verbal juggling can this organizing tendency be escaped. It has developed the general notion itself; habituation is a phase of it; custom, fashion, system, classification have all resulted from it. Disorganization is a synonym for confusion. Organization insures increased efficiency and potentiality for the pupil who has secured it, — in a word, success for the teacher.

13. **Summary.** — Education implies growth, increased power, facility, knowledge, skill, and an ability to use all of these with wisdom. It may be defined as the process by which an individual develops toward the highest service possible for him.

Teaching is a narrower term in which the emphasis is on the developer rather than on the organism to be developed. In the past this emphasis has been disastrous and has resulted in the relegation to the teacher of all kinds of training. The primitive child learned as best he could through contact with his environment. The teacher modifies and adapts the environment to the growing organism.

Teaching is the process by which a person possessed of definite knowledge or skill leads another to acquire similar knowledge or ability.

The function of the teacher with relation to the child's environment is (*a*) to add or (*b*) to subtract therefrom and (*c*) to emphasize desirable or (*d*) to slur over undesirable features of that environment. The function of the teacher as regards the child's experiences is to help him organize them and weigh them, to thwart useless and to reënforce and encourage useful impulses.

Knowledge, information, keenness, cleverness, brilliancy, skill, executive ability, training, and the like are all types of attainment involving more or less organization. Organization of experience is, then, the underlying process in all learning. In knowledge it implies orderly arrangement of ideas; in practical skill it implies *habit*. The organization of experience is, then, the excuse for the existence of the teacher, since it is not the number but the character and use made of experiences, which give them value. This aim of teaching is itself subservient to service, the end of education, which thus gives direction and point to the teaching process. Modern pedagogy has sought general notions and practical skill to the neglect of the basis of both, organization. This key to progress cannot be escaped; disorganization is a synonym for confusion.

CHAPTER II

Dominant Modes of Organizing Experience

"As the twig is bent, the tree's inclined."

Teaching in any phase has for its immediate aim the effective organization of the learner's experience. Accumulated knowledge is old experience made available for future situations. Habits, good or bad, are old experiences in performing certain acts so organized that without thought of the details involved, and almost without feeling, the complicated reactions take place in a fixed order.

1. **The narrower meaning of experience.** — This term "experience" is here used with a latitude quite beyond its more ordinary signification, and should be examined if we are to consider the ways in which experience is organized. The word is often employed in a narrower sense to indicate a person's confused feelings, thoughts, and actions at a time of stress. In common speech it refers rather to feelings, and so experiences are classed as pleasant or unpleasant. Our acts, our thoughts, or our memories are less often included. When something happens to us, we have had an experience.

2. **Experience as a psychological term.** — The psychologist to-day uses the term in a far wider sense. The intimate connection between the thinking, feeling, and willing activities of the mind being recognized, the terms "experience" and "phenomenon" have been drafted into his service to cover the sum-total, taken as a unit, of the activities of which there is consciousness during a certain period.

What an experience we say a person had in a railroad accident, during a burglary, in a bargain crush, on a cold day, or at a picnic. But it is just as appropriate to say that a life which has been most uneventful is made up of as many experiences as there are distinguishable units in it, whether they are interpretations of sensory impressions, the figments of the imagination, or the products of more complicated mental processes. The reader of the newspaper has as many experiences as there are items that he reads. The tailor has an experience for every movement of which he is conscious, and for such combinations of stitches or movements as he is conscious of as combinations, even when not aware of the details involved in the combinations. The teacher must have experience, we say. But every one has experience. Life without experience would not be life but death. We mean that he must have experiences of many and varied kinds in actual teaching; and moreover that they must be in such form as to be of assistance in future emergencies, *i.e.* in future experiences. The pupil must have experience of a kind that will fit him for life and its contingencies, and these contingencies as they arise will be in their turn experiences.

3. **Phases of experience.** — Any of life's happenings, provided only we are conscious of them, any of the dullest and most prosaic as well as the most exalted moments, the moment when the maiden declares herself bored to death, as well as the moment when she answers the question which is to decide whether she is to lead a life of single or of wedded blessedness, the longest and the shortest, the most significant and the most insignificant moments may be considered experiences, perhaps made up of smaller experiences. Thus all our thoughts, ideas, feelings, emotions, tendencies to act, and actual actions themselves are so interwoven with some experience or

other that they may be considered only as phases of a wider activity.

A case of indecision may illustrate the point. We may ourselves be undecided whether to go to the theater or the opera on a certain occasion. As a whole this case of indecision is an experience, in which first we may be conscious primarily of knowing that we are undecided; or secondly, we may be annoyed at our inability to make up our minds; or thirdly, we may be conscious of a certain tendency to move this way or the other and note that we are holding ourselves in leash, so to speak, until we have come to a decision. This knowledge, feeling of annoyance, and inhibited tendency to act are phases or elements of the experience, and are inextricably united or even jumbled together; but we may be relatively much more conscious of one phase than of another in greatly varying proportions. So, when confronted with a bill of fare, we have a confused experience as we decide quickly on roast chicken or roast beef and the items of secondary importance on the card. We may dwell on different phases, or on all of them in rapid succession. A choice between the advantages of the shore and the country for vacation, between work and play, between walking with one friend or another, if made consciously, is an experience in which now knowledge, now feeling, and now action or tendencies to action may predominate in consciousness.

The term "experience," as commonly applied in religious teaching, is used of some occasion when strong feeling has been aroused, when new and unexpected phases of feeling have manifested themselves. But sometimes those experiences involve deep conviction, while on other occasions they may involve heroic self-sacrifice; that is, in one case strong feeling accompanies *thoughts* and *beliefs*, while in another it attends *external action* or *conduct*. It is a great

mistake, however, for him whose religious development has been a steady growth, without marked crises or climaxes, to assume that he has never had any religious experience. Whatever he has of religious or moral character is the result of a gradual organization of his experience into convictions, principles, and habits of conduct.

4. Unlearned capabilities, automatic and purposive learning. — Nature has provided plants, animals, and man with many ways of adjusting themselves to their environment, but only animals and man organize their experiences so as to make them of use to them in future situations. Some kinds of mice can learn to go to a little house with a blue-colored front, because it suggests food to them, as they have always found it there, and not in a similar one with a red front. Other kinds, the dancing mice, do not learn this so readily, probably because the brightness of colors rather than their color value has played the most important part in the past of this species.[1] It has been said that bees can distinguish colors and associate them with sweetened water. These animals, and in fact animals in general, have the ability, as we say, naturally to do thousands of appropriate things whenever the appropriate stimulus presents itself. If the newly hatched chicken spies an attractive piece of corn within easy range, he is likely with a quick dive of the head to snap it up by a series of muscular movements quite complicated in their totality, but all coördinated or organized from the first. The chicken does not have to *learn* this accomplishment. A young child also can perform many kinds of action without learning, as, for example, in movements of head, limbs, and other parts of the body.

Compare the difficulty a child a year old and able to

[1] See Yerkes, "The Dancing Mouse," pp. 133–177. Macmillan, 1907.

walk has in picking up something with his hands. He makes many motions, sometimes overreaching, sometimes falling short, and in the end probably falls flat. The child has to learn both to walk and to pick things up, but he learns both without realizing that he is learning them. His learning is spontaneous.

There are, then, some things that man and animals can do without learning, and some things they have to learn, but that they learn automatically. Besides these easier tasks there are many others that man may learn, but only through definite thinking or direction, with a distinct aim in view, rather than automatically, without any consciousness of his learning. The child may recognize his father's authority instinctively even without learning. He may by imitation think of some things as right or wrong without being taught. There are others he must be taught and must learn with a definite purpose and effort, or he will not make the distinction. Life presents man with many complications and involved situations for which he has no automatic adjustment. If he is to meet the requirements of the situation, he must do so by a definite grasp first of the details of the environment bearing on the problem and at the same time of the end to be attained. Man begins life painfully unfitted for these complex adjustments; but his very helplessness has a function, in that it leaves him free to develop the power to make just the adaptations of attention and effort necessary later in life for the most intricate situations.

The fatalist may regard even elaborate thought processes as automatic, but the term "automatic learning" is here used of a self-carrying or self-working process in which there is no thought or attention given to any aim or result of the process. In sharp distinction the term "purposive learning" is applied to any learning process in

which an aim is recognized and worked toward, whether by a person's unaided thinking or by the direction and assistance of a teacher.

5. **Two types of automatic learning.** — These automatic self-working ways of organizing experiences must be a little further examined. As already stated, they are of two types. Some, which aid him far more than we ordinarily realize, are natural, inborn, or instinctive. All imitative tendencies, play tendencies, constructive, experimenting, and expressive tendencies, not to mention the assignment of meaning to various sense stimuli, and thousands of definite impulses to function with involved muscle combinations, such as the tendencies to make the eyes focus together, the inclination to reach for things, or to hold the body erect in a sitting posture, — all of these are automatic tendencies of a natural or instinctive order.

But besides these, man early acquires automatic tendencies and abilities quite beyond the compass of his natural equipment. Man is gifted natively with a brief and fleeting form of attention, but by exercise and wise guidance its effectiveness may be greatly increased both as to direction and span. Imagination and memory may be natively vigorous in a desultory and disorganized sort of way, and yet be comparatively helpless when confronted with a situation requiring the organization of details into a system or unit. For example, children may get a great deal of pleasure out of fairy stories long before they understand much from the various disconnected and often incorrect interpretations they give to the words they have heard. A two-year-old child of my acquaintance enjoys hearing his father read to him books that he certainly cannot understand, though they furnish his imagination apparently a sort of panorama of pictures by suggestion as various familiar words appear and are perhaps separately

recognized. This tendency is shown also in childish explanations of things. One young man noticed that leaves, sticks, and stones left standing some time on the pond where he skated gradually sank into the ice. He noticed also that skate marks and flakes of snow gradually disappeared from the smooth surface. Such data led him to explain to himself the phenomenon as due to the fact that the water worked through the pores of the ice and froze on the top. It is evident that he had not heard of radiation from dark as compared with light surfaces, but he manifested a well-developed, automatic tendency to explain things, which is quite beyond the power of man natively.

Similarly, a child wants to know who made God or why this or that action is right or wrong, or what keeps the moon from falling, and where the rain comes from, — questions which plainly show that, untaught, he is seeking explanations. Again, the child finds the world so complex and varied with so many unpleasant and pleasant experiences that he soon discovers the usefulness of his elders in providing him with pleasant experiences or in warning or guarding him against the unpleasant whenever he feels uncertain in a new situation. That is, the child tends to fall back on the authority of the older person and automatically to accept, up to a certain point, the dogmatic verdict of his elders as to the desirability or undesirability of a course of action. Neither the child nor the grown person is, as a rule, conscious of this acceptance of the thought of another as his own, but examples of it are evident enough in the spheres of religion, politics, precedent (in law), fashion, and in fact all of life's activities.

This very acceptance on the part of the child of another's judgment at this and that point is practically certain to involve him in inconsistency in his thinking.

When the young man gets his religious truths or beliefs from one authority, his science from another, and his ethics from still another, it is not strange if the automatic tendency to organize these various truths involves him in serious doubts and difficulties. He will automatically work out or try to work out his problems. Shall we command him not to think, whether he belongs to the clergy or laity? That were to end his education, then and there to stop his growth. Shall we stop his speech? That were to rob him of half his manhood.

The automatic ways of organizing experience are, then, (1) a wide range (as we shall see later) of instinctive ways with which man is natively equipped, and (2) a large class of modified, combined, or selected ways which gradually develop according as satisfaction has been gained through their chance employment. These acquired automatic ways of organizing experience may be grouped in classes of which the most important are interpretations of and adaptations to complex sense experience, the use of the imagination in suggesting new truths or new ways of doing things, the acceptance of truth or error on authority, the use of *reason* in criticising and reënforcing suggestions of the imagination, and various subtle feeling and will attitudes of mind favorable in the main to bringing experiences into such combinations as to make them of increased service.

6. A definite end necessary for purposive learning. — By purposive learning is meant the way we always proceed when we set out to learn something and the way we usually have in mind when we start out to teach something. This sort of learning is evidently chiefly distinguished from the automatic mode of organizing experience by its recognition of an end to be accomplished, whether the experience embraces a problem to be worked out in thought or a

knack to be acquired like that of balancing one's self in riding a bicycle.

This end should always be definite. Neither pupil nor teacher will get farther than he would in a daydream unless there is a definite idea to be attained, a definite feeling to be worked toward, or a definite degree or kind of skill to be acquired; and even these should not be desired for themselves alone. The principle of service, the highest service, all values being considered, is at bottom that which must decide on the course of development.

7. The concrete as a factor in purposive learning. — There should always be provided either actually or in imagination the concrete situation which gives point and meaning to that which is taught. The unanimity with which the world's great teachers have used the parable, the fable, the dialogue, the historical illustration, emphasizes the value of the concrete situation for establishing truth. Any situation presents data of one sort or another. It may be organized with a view to the *present* adaptation, or its present significance may be disregarded in favor of a future possible situation for which more data are needed; or a general truth may be sought which is to adapt itself to so many applications in varied concrete situations that we are sometimes in danger of forgetting its definiteness in our contemplation of it as an abstraction. My idea of triangle is just as definite as my idea of any given triangle; the idea that all bodies are subject to the law of gravitation is psychologically just as definite as the thought that this pen is attracted in some degree by the moon. The definiteness of the abstraction is, however, approximately proportionate to that of the concrete examples illustrating or contributing to it. Those truths that lack the red blood of concreteness, those that we fail to apply in our lives, have been aptly termed "bedridden

truths," anæmic, fit only to be kept upstairs, not for contact with men. Abstractions must not be regarded as necessarily hazy. When they are obscure, it is proof positive of an inadequacy in our experience, an inadequacy capable of removal only by more concrete experiences. In general, the more concrete the situations, the more definite the organization of them will be; and the history of education, like the history of philosophy and the history of religion, is witness to the general futility of attempting to organize abstractions without regard to the concrete data on which they are based, and the concrete situations, real or imaginary, to which they are to apply.

8. The automatic and purposive ways of learning intermingle. — To illustrate the different degrees or proportions, in which the same action may involve both the automatic and the conscious ways of learning, involves finding a feat of manual dexterity which a boy and an elderly man may both learn to perform. Comparison of the learning process in the following case, which illustrates the automatic, with one where reasoning is more prominent, will not be difficult, since even those who have not played golf have practiced hitting at something with a stick at some time or other.

A young boy learns to play golf largely by taking the sticks as he has seen some one hold them and whacking at the ball in a haphazard fashion. Sometimes he hits it squarely, and then he gets a satisfaction that tends to impress on him the memory of the movement resulting in this satisfaction. He tries the next time to reproduce this feeling and to locate the point of difference, though he is or may be conscious of none of these efforts on his part. He keeps trying and trying until he succeeds, noting meanwhile how other people stand, hold their clubs, and swing, and comparing their ways with his. A man fifty

or sixty years old, on the other hand, tries this method, but makes no such progress. He is not free to establish a dozen new ways of getting a swing, as the boy is. He has one or two already established ways of turning on his feet and of swinging his arms, but these, unfortunately, are not such as to help him in his golf. He must therefore not merely recognize and strive for the details of the right way, but he must more or less consciously break up the old ways. His chances of success are poor unless he is wisely directed, *i.e.* taught.

Suppose, on the other hand, a new gardener is to be employed. The boy and the old man are to discover whether the applicant is likely to prove desirable or undesirable. The boy sees only a man before him. He has features not greatly different from those of the average man. He drawls a little, is dressed in farmer's attire, is of medium height, talks softly, and looks physically able. The boy has seen and heard a few things, but in the end this is only a man, and the boy does not feel at all certain as to his qualifications, as a gardener. The old man, however, notices the applicant's eye especially, and the straightforward glance with the sympathetic and half-anxious look on his face. He questions him as to where he has worked before and notes the readiness with which he replies. He finds out just what his duties were, why he left, what he liked or disliked about his work, gets his taste in arranging trees, shrubs, and flowers, tests him as to his willingness to undertake little jobs aside from the regular work of the gardener, asks about his family and where he lives, encourages his confidence as to his intentions regarding the future, and so through these and many other questions gets material for an estimate of the kind of person he is. All this would have been quite impossible for the boy. The boy automatically noted a few things, but could not

possibly come to any fair estimate of the man's ability because he lacked resources to work out the problem, although he may have recognized definitely enough its general nature. His only hope would be in being directed, *i.e.* taught. The man of experience had not only the problem but organized experiences from which he could estimate and imagine the man's past, present, and even future work as a gardener in varied situations. In this case his past experience being organized was of distinct advantage, whereas in the case of golf-playing the particular forms of organization were an actual hindrance.

9. The effect of previous experience on purposive learning. — It is evident that in the purposive mode of learning it is necessary at times to break up undesirable and to form desirable connections between our various mental processes, according as a given situation is interfered with by the undesirable connections or is too complex for the connections already made among our mental processes.

The elderly man had to break up the established ways of raising his arms above his head and to find freer and more effective ways which had to be coördinated into one vigorous swing. The boy had almost no basis in his experience which would help him in hiring a gardener. The situation was too complex. The elderly man could, however, teach him in part at least how to meet such a situation.

The truths above illustrated may be stated in physiological terms as follows: It may be necessary in forming a new path of nervous discharge (1) to inhibit certain established pathways, or (2) to complicate in new combinations brain elements previously functioning with comparatively little relation to each other. Either or both of these principles may operate in any given instance. In religious and in moral training so much emphasis has been

put upon the negative "thou shalt not" and so *little* on the positive development of good feeling, good traits, good disposition, and helpful mental attitudes in general that it is little to be wondered at that our precepts are not more attractive.

10. The teacher and the ways of organizing experience. — What, then, is the function of the teacher with relation to these two ways of organizing experience? The teacher is an element, thrust into the environment of the child, which not only changes it but is there expressly to manipulate the environment so that the child may learn the essentials agreed upon or left to the teacher's discretion. The teacher may (as indeed he too often does) neglect all the automatic (both natural and acquired) ways of learning which the child has, and insist that he work out everything systematically and under guidance. This is to handicap the child both seriously and unnecessarily. It excludes automatic experimentation and unnecessarily dissipates the effort of the teacher. Far better is it so to manipulate the child's environment, that he may be incited and stimulated to learn and to do things automatically and that he may at the same time be so led as to discover truths and acquire dexterity which would be absolutely impossible for him without this helpful factor in his environment.

Thus we see a teacher of geography bring in and encourage the children to bring in picture books, maps, and objects from Japan. The children's environment is made richer in features suggestive of the life and work of the Japanese than it could well be unless Japan is actually visited. So a teacher, instead of telling children to practice a certain slant in writing, may merely add to the environment the suggestion that a letter home would be welcomed, and the boy tries to improve up to the point where the

letter may be sent. A teacher is necessary for such suggestions. The child would not think of them himself.

11. **Negative teaching.** — All this applies to that which should be called positive teaching. In teaching negatively (*i.e.* what the child should *not* do), it is the function of the teacher so to manipulate the child's environment that he may be protected from temptations that are greater than he is prepared to resist and are serious in their results, and at the same time to guard him from inevitable temptation by appeals to his fear of danger, and by depicting to his imagination the evils and sorrows that weak courses of action are likely to bring in their train. But in no case should effort be wasted in this direction, unless there is a real danger which calls for preventive action.

12. **Neglect of the automatic.** — The teacher's error often consists in a disdain of the automatic ways of learning. If he can't "ding" things into the boy's head and make him say them parrot-like, he seems to take it for granted the child is learning nothing. In teaching children *en masse* this neglect of the automatic is almost certain to play a serious part. It is at the root of all lock-step and routine procedure, the special bane of large school systems, and seems almost to justify splitting them up into separately directed subdivisions. In the hurry and scurry to bring up to the standard those children that are slow and irregular in attendance, the teacher forgets that the brighter children learn much automatically and do not need the formal treatment necessary for others. It is a waste of time to teach a cat to wash itself. This disregard of the instinctive and acquired aids in learning has led to serious errors in our practice, and is perhaps nowhere better illustrated than in our religious teaching, where we still insist on preaching, revival meetings, Bible study, — all good enough, but purposive, formal, and often weari-

some to those whom we fain would teach, while little or no account is taken either of the natural or acquired ways of learning, even in so important a matter as the essentials of Christian living. We throw the limelight on the man's belief and fail to emphasize his conduct. Provide places where people may spend their leisure amid uplifting influences, where ideals are built up and lofty motives enkindled; give them literature and encouragement which will aid them in and perhaps even lift them to a higher and less mechanical plane of work; establish more "People's Palaces" and the like and there will be an impetus given to Christian living through the automatic ways of learning not afforded by hundreds of sermons and a thousand recitals of religious experience. Nor am I underestimating the value of these sermons and recitals in teaching ideals, moral principles, or religious belief.

The tendency of the teacher is elsewhere, as in religious teachings, to dwell on the purposive way of learning, to let the child see what is to be thought out or done, and then to help him to do it formally and pedantically, forgetting that the child's automatic ways of learning must permeate even the purposive ways and are going to give him much knowledge and many kinds of skill not dreamed of even by the thoughtful teacher.

A child who had learned only that which he had set out to learn, and only what his teacher had definitely intended to teach, would rival Frankenstein's monster.

13. **Five fundamental principles.** — In conclusion, nature has provided abundant ways of learning. The instinctive ways are the basis. Out of these grow the more complicated habitual but still automatic ways. The teacher must use the instinctive and develop and use the habitual to be successful. They are not to be regarded as helps in time of need, but as the life-giving

principle of all teaching. Hence (1), in moral, religious, or other teaching, never teach formally what will with equal advantage be learned automatically. (2) In any teaching connect as soon as possible with the automatic ways of learning. (3) Base all future accomplishment on past achievement. (4) In purposive learning let the child not merely realize that a worthy and definite end is sought, but (5) let that aim be nourished on concrete experience, with full appreciation of its practical utility in possible or probable future contingencies.

14. **Summary.** — The term "experience" is used for any of life's happenings, internal or external, of which there is consciousness. Thoughts or ideas, feelings or emotions, tendencies to act and acts themselves, are interwoven in experiences.

Plants, animals, and men are provided by nature with many ways of adjusting themselves to environment. But only animals and man organize experiences. Children perform some sorts of acts spontaneously without having to learn how; others they learn automatically, without direction and effort, while still other acts are performed only as the outcome of thought and purposive effort.

In large part, automatically, the fleeting forms of attention native in man become stable and controlled, imagination is transformed from promiscuous fancy to organized construction and reasoning, memory from chaos to system. Automatically the child learns to regard or disregard authority. Much inconsistency results from automatic acceptation of authorities which are contradictory in their implications. The chance variation in conduct of whatever sort, provided it is found satisfactory, tends to become automatic, if the satisfaction continues long enough. Automatisms may be grouped according as they enter into sense experience, imaginative

processes, acceptance of authority, the use of reasoning processes, feeling states, or will attitudes.

Purposive learning is distinguished by a recognition of the end to be attained, which should be definite. Reliance must be placed on the concrete as illustrating and contributing to the more general aim and giving it point. All history is witness to the futility of abstractions which lack concrete content.

The automatic and purposive ways of learning intermingle, and in different proportions for individuals at different stages of growth. The young are quick to attain results experimentally and are free from obstructing habits of movement. The old are rich in the resources of experience and more or less obstructed by previous habits of action. In forming new modes of action, it is often necessary (1) to inhibit certain actions, and (2) to complicate into one organization various mental and muscular adjustments of an elementary character.

The function of the teacher is so to manipulate the child's environment as to stimulate him to automatic learning and at the same time to lead him to the acquisition of truth and dexterity otherwise impossible. In addition, the teacher must protect the child from temptations and fortify him against those that are inevitable.

The teacher's error consists in a disdain of the automatic and over-emphasis of the purposive way of learning. Religious teaching illustrates this neglect; but it is manifest in all teaching and culminates in formal pedantry. Automatic must permeate purposive learning. Hence, (1) never teach formally what will be learned with equal advantage automatically; (2) connect as soon as possible with the automatic; (3) base future accomplishment on past achievement; (4) point out a worthy and definite end; and (5) associate with the ends abundant concrete experience.

CHAPTER III

Typical Forms of Organized Experience

"Happy is the man whose habits are his friends."
— Shakespeare.

In the preceding chapter it was shown that the child has automatic ways of organizing his experience, and other ways, the purposive, adapted to the more complicated situations of civilized life. In this chapter the results of these ways are to be considered to see if the diversity presented admits of classification. If we know how the child learns, and the nature of what we wish him to learn, we may reasonably expect to get some fairly definite methods of reaching these ends.

1. **The variety in the child's experience.** — Here is a list of some of the child's achievements. He learns, perhaps all in the same day, to tie his necktie in a bow, to jump a post, that Mr. Blank, his neighbor, keeps a jewelry store, that London is the largest city in the world, how to do short division, that his teacher sometimes says things that she doesn't mean (or else forgets), the way to pronounce a few words, how to abbreviate New York, and to spell "business," a short cut from his house to the ball ground, that he can run faster than the new boy at school, that he likes to hear a certain piece of music, that he doesn't like olives, that oil is lighter than water, that Abraham Lincoln did not have the chance to study and learn that he has (though this may not be so), and so on, — a heterogeneous mass of impressions, facts, truths, circumstances, events, principles, names of objects, their properties, dimensions, relations, etc., — a motley array to which must be added (if we count first efforts as jus-

tifying us in the use of the word "learned") how to do many varied sorts of things, how to work various muscles in such a sequence as to produce a required movement, how he feels when he is cross or anxious or angry or afraid, how to treat various people, how he can refrain from responding to impulses which he has learned are unpleasant or undesirable in the responses they excite.

2. **Knowledge as a type of organized experience.** — In all this multiplicity of things to learn or things learned, what common element can be found? Historically, ideas have been emphasized from Plato to Spencer as the objective point in learning. Herbart recognized the complexity of what is taught, and expounded the "circle of thought" and the ideas or thought-masses. They are to be formed in building character, but he did not formulate a scheme for securing the habits absolutely fundamental to character. Spencer, while making "complete living" his aim of education, has followed the previous trend by assuming that knowledge was the essential of complete living, as is implied in his chapter, "What knowledge is of most worth" and in his answer, that the knowledge of most worth is science, *i.e. organized* or *classified knowledge.* But *is* knowledge the essential of complete living?

More recently Professor De Garmo, in his "Essentials of Method," and the McMurrys, in their "Method of the Recitation," fail to recognize any form of teaching that does not assert the claim of general notions to the distinction of furnishing the goal of instruction. Is this still more limited field of human activity the goal of teaching?

3. **The error of neglecting the doing phases of experience.** — The limitation in the viewpoint of all these educators has not only added seriously to the necessary clashes between the experienced teacher and the novice, but, as I have hinted in the Preface, it has put the novice in the

wrong at almost the only point where the experienced teacher was "dead certain" that he himself was right. Schemes of teaching which lacked provision for repetition or drill, or at least substitutes for them, the experienced teacher could from his point of view at least afford to dismiss on the mere ground of his experience, whether he understood the pedagogical ground for his method or not.

Any general scheme for teaching which does not set forth the process of learning as applied not only to general notions but to complex individual notions; not only to knowledge or science, but to the practical ability to use it, — any scheme which does not show not only how certain things are done, but how to do them with facility, accuracy, and efficiency in general; not only how to discriminate between feelings to be furthered and encouraged but how to set ourselves to the task of developing them, — all such schemes are seriously at fault. They fail utterly to take into consideration the tremendous value of getting in the way of performing all common acts automatically, thus leaving consciousness free to focus on the more complex phenomena presented, and slight at least half of the organizations of experience which the child must secure. Learning to walk or to swim is not (strictly speaking) knowledge, much less science, but it is a desirable and useful accomplishment to acquire. We say we know *how* to skate or to write, but we do not mean that we know how we do perform these useful acts. We merely mean that we *can* perform them. These are not bits of knowledge essentially, much less sciences, thought-masses or ideas, but rather forms of reaction which have passed an elementary and uncertain stage and have become automatic, easy, and certain. No one can for a moment compare the disorganized efforts of the beginner at skating with the graceful swings of the accomplished skater with-

out realizing that out of these awkward, spasmodic, trembling experiences has come an organization which is perfection itself when contrasted with the beginning. And yet this is not knowledge, but rather skill that has been acquired. In the writings of both philosophers and advanced theorists little is found to show how one secures such automatisms as are involved in learning to write, to sing, to draw, to speak correctly, or even to master the various arithmetical processes. At the most they have indicated only how to get some of the ideas that are fundamental to these processes.

Even Bagley, who sees plainly the importance of habit,[1] and touches on the methods of acquiring it in his "Educative Process," treats the subject in the most cursory fashion; and when driven directly to habit by the problems discussed in his "Class Management," he does nothing toward working out the implications of his formulation[2] of the law of habit.

No reasonable person would deny that ideas are forms of organized experience. But experience covers all of the conscious mental processes involved at the given period. There is no reason for emphasizing the organization of the idea or *stimulation* phase to the exclusion of the reaction or feeling and willing phases; the action or *reaction* phase of consciousness must be given the place it deserves in the organization of experience. Surely it is as important in learning from the standpoint of education to get good habitual forms of attention, interest, courtesy, and good will as it is to get clear ideas. It is as important also to organize the feeling side of human nature, but the problem is much simplified, as will be seen later, by the

[1] See Bagley, "Educative Process," p. 7. Macmillan, 1905.

[2] See Bagley, "Classroom Management," p. 16. Macmillan, 1907.

fact that feeling is cultivated only through the ideas which underlie it or the habitual reactions with which it is closely connected. That is, feeling may be perhaps best regarded as a quality or tone involved in ideas and reactions, with which it is so intimately connected as to be impossible of development apart from them.

4. **The two marked types of organized experience.** — This is, then, after all, our question, How are the experiences organized into automatisms or habits, and how are they organized into ideas varying from fairly simple and concrete to those of extreme complexity? The word "idea" may be appropriately used[1] of organized experience whether it represents real knowledge of an object, a judgment, or only a guess, a fiction of the imagination, a memory-image, a general idea, or a notion of the applicability of a certain word to a class of objects. One may say, for example, that he had a clear idea of the paper on which he writes, or that he has an idea that it may rain soon, or he may guess, *i.e.* have an idea, that a child's name may be John, or he may imagine and so get an idea of himself as a wealthy man or as a prince of the Middle Ages, or he may have an idea of the first teacher he remembers, or of a snow plow. All these are ideas, and (going back to our former illustration) it would be manifestly nonsensical to speak of having a habit of the paper or a habit that it may rain, and so forth.

On the other hand, we may speak of a child's having a habit of shuffling his feet, pronouncing distinctly, writing with a certain slant, holding his pencil in a certain way, putting the divisor, dividend, and quotient in certain positions, holding his knife in his right hand, and so forth. And it would be equally impossible without changing the meaning to substitute the word "idea" and say he had

[1] See Chapter IV.

an idea of shuffling his feet, pronouncing distinctly, writing at a certain angle, and so forth.[1]

5. **Confused forms of organization.** — The use of such terms as appreciations, attitudes, abilities, *et cetera*, is common in educational terminology and invariably covers up a failure to complete an analysis of what is really implied. The practical recommendations growing out of such vague terminology must be vague also. Until educators have pushed their analysis to the point of discovering what belongs to the methodology of the idea

[1] If Andrews, in his article on habit (see *American Journal of Psychology*, Vol. XIV., pp. 121–149), had been dealing with organized experience instead of mental functioning, he could hardly have escaped arriving at the two types already described. He suggests subsuming all mental experience under the two heads, "habitual and non-habitual functioning," including in the latter all novel experiences. Accordingly, any new act of knowing, feeling, or willing, is a form of non-habitual functioning. But elements of knowledge, emotion, or willing may function together in a single moment of consciousness and never again, such organization as there was at the moment being lost instanter, but the combination would be an idea in so far as it was focalized in consciousness. Evidently, when organization of experience is made the goal of teaching, the thought is of a repetition or continuance of the functioning upon occasion. When various associations call up to focal consciousness certain groups or systems of associated experience, the organization is called an idea. Such ideation is not, however, independent of habit. When a certain feeling is always evoked by given elements in similar situations, it is organized into habit. As long as it is uncertain and variable, it must be regarded as an associated phase of consciousness not recognized as immediately necessary to the effective organization of experience. Similarly, acts of decision, of persistence, or of attention may be constant, *i.e.* habitual, in a given situation; or on the other hand they may be very uncertain or whimsical in nature to a degree accountable only by the lack of organization in the chance associations which constitute the fundamental basis of the action. This basis is ideational.

(used as I have used it in the sense of any definite comprehension) and what to the methodology of habit, the science of teaching can be little more than a pretense. If by appreciation is meant at one moment habits of feeling and at another habits of expression and at another the calling up consciously of masses of associations, surely there can be no general method for developing such appreciations. If one is ever found, it must develop through the contributions of the general methods, first of instruction and then of habit-forming. The emotions themselves are similarly subject for their cultivation to these two forms of organization. They can be approached only from their idea side or from their reaction (habit) side. Attitude is a similar figurative expression implying often, perhaps usually, habit, while at other times it refers to the particular massing of ideas in response to a given situation. In the word "ability" is implied both knowledge and skill, or either, according to the reference. It is plain, then, that (from the standpoint of method) these are ambiguous terms, to be given meaning by reference to the methodology of imparting ideas or of establishing habits.

Professor Findlay [1] makes two divisions of his method, the "methods of imparting instruction" and the "method of imparting skill." He evidently is working toward the same fundamental difference in organization that has been outlined here, but in skill he has hit upon another of these unfortunate words.

In the first place, skill is too limited in its application. It covers external action fairly well, but habits of thought, habits of feeling, and habits of decision, and so forth, cannot be referred to accurately as forms of skill. Nor does it cover the automatisms developed, which are too insignificant in themselves to be considered as skill.

[1] Findlay, "Principles of Class Teaching," p. 161. London, 1890.

In the second place, skill often implies a combination of ideas and habits, as it signifies constructive imagination, ingenuity, and invention, together with certain habits of experimentation.

Thirdly, it fails on this account to emphasize the automatic, self-carrying character of the habit forms of organization, which really distinguish skill from knowledge or the ideational forms. That this side of skill may be neglected is further emphasized by the fact that Professor Findlay fails to apply the principles brought out by both Professor Bain and Professor James. Nor does he substitute others to cover the same ground.

Campe [1] combines in his use of habit (Gewohnheit) both skill (Fertigkeit) and tendency or impulse (Neigung), illustrating the difference by stating that the galley slave may have skill but no impulse, while the beginner on the piano may have the impulse to play magnificently but may lack the skill. In such a mechanical operation as is indicated by his illustration, skill and habit mean almost the same thing, though even here it is evident that skill applies to general ability in rowing, while the expression, habit of rowing, because of its lack of specificness, fails to satisfy, and immediately raises the question, To which of the numerous habits involved in or associated with rowing is reference made? The expression "skill in rowing" excites no such query. The case of the galley slave is somewhat exceptional, inasmuch as life had necessitated the acquirement of a habit distasteful because of its associations with fatigue and penal servitude. Ordinarily, when a situation recurs and is associated at length with some habit of reacting, there is a satisfaction attached to the experiences in each instance, which develops into the feeling of

[1] Campe, "Philosophischer Commentar über die Worte Plutarchs: Die Tugend ist eine lange Gewohnheit."

familiarity, and constitutes the very prerequisite of the formation of habit. Hence Andrews explains Reid's[1] "inclination" and Stout's[2] "propensity" in part by the feeling of "naturalness" or "of-courseness" which is involved in habitual acts, when he says,[3] "this affective characteristic of habit, together with its organization as an associated series, explains its impulsiveness." While this position is well taken, it must be remembered that children may be habituated to many actions sufficiently to get this comparatively weak motive to action, but the action will not be forthcoming, because it is completely snowed under by a host of unpleasant feelings which have become attached to the response. The feeling of familiarity, of naturalness, etc., is strong enough to impel when no resistance is offered; but it may be met by counter propensities.

6. Habit and memory. — Another objection to the use of the word "skill" for the habit side of method is the fact that it does not with fitness refer to mechanical or rote memory, which is for the most part pure habit. The securing of such habits would fit neither in a methodology of instruction nor in a methodology of skill. In so far as the experiments of Ebbinghaus and others, following his lead, have dealt with pure repetition and practice on the basis of successive association, they are as much studies in habit as in memory, and contribute definitely to the methodology of habit. When a person repeats over and over a list of nonsense syllables, until they can be recalled automatically in a fixed order, with little or no focal attention, he has formed a habit of reproducing the series. In many instances the experimenters use as the basis of their

[1] Reid, "Active Powers," Essay III., Chap. III.

[2] Stout, "Analytic Psychology," Vol. I., p. 258. London, 1896.

[3] *American Journal of Psychology*, Vol. XIV., p. 137.

test the ability to reproduce the series correctly, regardless of the amount of effort or consciousness involved. This undoubtedly means that at least parts of the operation are habitual, but it does not mean that the total recall is one habit. As a contribution to the psychology of habit, therefore, such studies are less valuable.

7. The function of habit. — The importance of habit can hardly need emphasis when one considers that it is one of the fundamental forms of organization of experience. Modern psychology, however, has so modified our conception of habit that an additional word calling attention to its function in human economy is desirable. Habit is no longer regarded as an exceptional characteristic of certain sorts of action; but, speaking generally, all of our action, physical and mental, is either wholly habitual or saved from the habitual only by the slightest departure or modification. The child begins as a little nervous mechanism and gradually modifies his action into stereotyped forms which persist for a greater or less period and are again further modified and further modified in an almost interminable series, according as satisfactions are discovered in connection with these successive modifications. The result is that almost all of man's reactions to situations or stimuli which repeat themselves at all frequently (and they comprise most of man's actions) are really matters of habit. The child begins with a few instinctive movements of lips, tongue, and throat, and develops habits of making sounds to express his meaning. Those sounds gradually become specialized into habits of connecting certain words with separate objects or ideas. Later, he puts two or more words together into phrases. Still later he gets habits of making complete sentences, and it may be many years before he groups these sentences into paragraphs, either in his thought or in his writing.

What, then, is the function of these automatic tendencies of our nature? Evidently to release attention from these oft-repeated sorts of action, thus making it possible for attention to focus on the new or peculiar elements of the situation or the response. As some one has said, "Habit is a lubricant which reduces the friction of life to a point where progress is possible." Incidentally it minimizes the degree of attention, and diminishes fatigue, simplifies action, makes it more accurate, and reduces the time and energy necessary for adjustments. The beginner at tennis tries to focus his attention everywhere. He tires much more quickly than one accustomed to playing. His movements include many in excess of the requirement. He gradually becomes more accurate, and able to hit a swift ball which would earlier have eluded him. As a result of this form of organization of experience, then, adjustments to environment are made which form not only the basis of further modification but serve to free consciousness of those idea-complexes which would otherwise be of little service and might even obstruct its effective functioning.

8. Seeking automatisms is fundamental to teaching. — The distinction between the idea and the habit is not in its fundamental aspects hard to make; and yet it has not been made, despite the fact that it is of the utmost importance. The methods by which an idea is learned and a habit gained are distinctly different. As will appear more clearly when the differences are brought out in relief, multiplicity of association is the basis for one, and invariability in the path of repetition the basis for the other.

If this is so, it is evident that the teacher should adapt himself to the situation. The born teacher has done so automatically to some degree. Others have asked themselves mentally some such question as this: "Now I have taught this point, must I drill on it?" If they

thought that the child might forget the point, and would suffer from that fact, or if they thought he would lose much time through failure to get facility in using it, they gave him drill, often of the most formal and useless sort, not calculated even to secure the habit they were blindly groping toward. The habit side of the teacher's work should be recognized and definitely planned for.

After the subject-matter of a lesson (or series of lessons making a unit) has been determined, the first great principle of teaching is, *analyze the subject-matter and determine what elements in it are to become habitual.* Wherever continued problems of discipline arise in teaching, they also are caused by the lack of certain automatisms. In each instance the whole situation must be taken into account and analyzed in a search for habit. When found, the formation of the habit will solve the problem of discipline with an effectiveness not to be found in mere decrees or penalties. Failure to distinguish in teaching between knowledge and conduct, between idea and habit, is equivalent to forsaking all claims to scientific teaching and taking chances with the empiricist. The important points to be considered in making this analysis are carefully set forth in the following chapter.

9. **A point of difficulty.** — The only point of difficulty is in those instances where that which begins as idea gradually becomes automatic and so ends as habit. The case of the child who has learned the use and sound of most of the letters, but has never heard the alphabet said, will serve to illustrate. He is told that it is a list of all the letters, and the list is given. The child gets first an idea of an alphabet as a vague string of letters, and then of this particular kind of alphabet. He sets to work and tries to commit it to memory. The first time he goes through it he has an idea. When he is first able to say it all from

memory, it may be considered an idea, though the a-b-c part of it at least may have become automatic by that time. When he gets it so thoroughly as to require little or no conscious attention, the whole thing has become practically one habit, which may or may not be ideated, as we shall presently see.

Consequently, a second principle is already allied with the first, where habits are found to be a part of the requirement of the subject-matter. *Determine whether the habit is an automatism which will be hit upon by the child as a result of his own initiative and experimental efforts, or implies a definite idea which must first appear in consciousness before it can be transformed into a fixed automatic process.* That is, determine whether the method of imparting the idea must precede the method of establishing the habit. Most of the habits gained in school, aside from those which are disciplinary, belong to subject-matter and are of the drill type.

10. **The combination involved in idea-habits.** — For convenience, such a habit will be called an idea-habit, because getting it involves using the method of getting an idea and often of forming a habit. Any adult can easily get an *idea* of what is meant when it is suggested that he repeat the alphabet backward. If he tries saying it, however, he will soon see the difference in the reaction between an idea and a habit. If he persists until he can say it backward with as much facility as he can forward, then he will have formed an *idea-habit.*

11. **The difficulty not practical.** — It is evident that there must be some point in the above process where it is hard to say whether what is learned is a habit or an idea. This may seem to be a difficulty, but it is really negligible for two reasons. In the first place, there is no difficulty in deciding whether a given idea or combination of ideas

should come automatically or be worked out when needed by the child. If the methods of engendering habits are either different from or supplementary to those employed in imparting knowledge, the necessity from the standpoint of economy, that the teacher know which he has to teach, is evident. In the second place, the transition from idea to habit in the child's mind may involve a theoretical point of difficulty, but the advantage of distinguishing between green and blue is not vitiated because there is theoretically a part of the spectrum intervening which cannot with assurance be named either green or blue. In short, neither the child himself nor the teacher has any use to make of the point of transition. The habit is to be *fully* established. The success of both teacher and child depends upon and is tested in the case of habit by the *automatic* character of what the child has learned. Consequently, the advantages of the distinction are offset by no practical disadvantage.

12. **Practice in making the distinction desirable.** — A little practice will enable students during observation [1] to determine (quite successfully) which the teacher is working for. A careful examination of the course of study also should be made to determine just where habits are desired and where ideas. Some practical work in both directions, until the distinction clears itself in the mind, is desirable at this point. This will serve also to emphasize the usefulness of the following chapter.

The teacher will of course have abundant opportunities for practice both in making the distinction and in the application of the appropriate method.

13. **Automatisms involved in courses of study.** — Courses of study should also be searched for indications of the need of habit which will be indicated, if at all, by some expres-

[1] See the Appendix.

sion pointing out the need of repetition or practice, including the word "drill."[1] With the development of a methodology of habit and therefore of drill, it is hoped that in courses of study much more assistance may be given the teacher in regard to this drill work, that attention may be called to the various automatisms or habits sought, and suggestions may be made for securing them as a part of the child's training.[2]

This, then, is the first important distinction for the teacher to make after he has reached a decision as to the general nature of what is to be taught. Given a lesson, does it involve or lead toward a habit, or does the lesson imply that an idea is to be gained? If it implies a habit, then the question is whether it is an idea-habit or a mere automatism.[3] With these distinctions cleared, method is possible.

[1] In America "drill" is the word most likely to be used in courses of study to call attention to the need of repetition or practice. In England it is used almost exclusively of military or gymnastic exercise in this connection, and instead of speaking of drill in recognizing words, in number facts, in writing, some such expressions as "training," "disciplining," "encouraging repetition," or "practice" are used. There are objections to all of these, however, while the word "drill" is used throughout America to cover all that the teacher does in connection with subject-matter to secure habits.

[2] As examples of a trend in this direction, the courses of study in drawing, in arithmetic, and in English in the city of New York show that the authors have had this distinction in mind, though perhaps not in all cases consciously. It is also apparent in the report of the Connecticut Committee on English, especially in the section devoted to reading, spelling, and grammar.

Courses of study in Baltimore, Indianapolis, New Haven, and in some instances elsewhere, indicate more or less of differentiation in this regard.

[3] Of course any habit may be brought to the notice of its possessor, and so he may get an idea of his habit, that is, he has both

14. **Summary.** — The child's experience brings to him a heterogeneous mass of impressions. From them, facts, truths, circumstances, events, principles, qualities of objects, and so forth, are learned; and with these a goodly array of actions is either involved or becomes associated. In the past the educational theorists have set forth knowledge in one form or another as the common genus in the variety of experience. But knowledge is too narrow; it does not include elements of skill, such as accuracy, facility, and efficiency in general. Knowledge and ability to use knowledge are not synonyms. We do not know how we perform certain acts. We merely know we can perform them. The philosophers and educational theorists have been generally silent as to methods of teaching the organizations which should be termed rather of skill than of knowledge, though these constitute a large part of educational procedure.

The word "idea" appropriately denominates one kind of organization, while the word "habit" effectually covers the other type of experience. Attitudes, appreciations, impressions, and the like are vague terms whose meaning can only be rationally determined in terms either of idea or habit or both. The term "skill," though implying habit, is not synonymous with it. Skill is more limited in application and often implies ideation.

Accordingly, the first great principle in scientific teaching is to analyze the subject-matter and determine what elements in it are to become habitual. Experiences may

the idea of his habit and on occasion the definite form of reaction as well. A man may not know that he has formed a habit of squinting one eye when he looks off into the distance. Some one may call his attention to it, and thereafter he may catch himself squinting. Then for a while at least he may have both the habit and an idea of the habit he has formed, though he may wish, perhaps, to inhibit it, as in this case.

become amalgamated into an idea-complex, and later the idea may itself become stereotyped and automatic. That is, it becomes a habit and may be termed an idea-habit. For such the methods of imparting ideas must precede the methods of establishing habits. The fact that there is theoretically a transition point is practically no disadvantage, since, if an idea or an act is to become habitual, there should be no attempt just to cross the transition point; the habit must be well established.

A little practice will make the distinction easier in its application. Courses of study should indicate points where automatisms are to be secured, and offer suggestions for getting them. In any case, the courses as outlined must be studied for the habits involved.

Given an idea, a habit, or an idea-habit, the method of procedure may be outlined. Without such a distinction, no method is possible.

CHAPTER IV

The Difference between Habits and Ideas

"Education is naught but the formation of habits."
— Rousseau.

In the type of organized experience studied in the previous chapter, the terms "idea" and "habit" were used in a broader way than is authorized by most psychologists, and with a significance not greatly at variance with popular usage.

1. **Nature and definition of an idea.** — When in ordinary experience a person burns himself on a hot stove or radiator, he might say, "I had an idea that it was hot, but no idea that it was so hot as to burn me." One may say, "I have no idea what I shall do to-morrow," or, "My idea is that no president should serve a third term," or that "all children have to be vaccinated before they can attend school, because mine were." An old idea of heaven pictured it as a city whose streets were paved with gold, whose buildings were studded with precious stones, and so forth. This is a popular use of the word "idea," which covers practically the whole gamut of what the psychologist considers under cognition, with the possible exception of sensation. An idea must be more or less definite. One may speak of having a vague, indefinite sensation of strain, or of nausea, but it would be a contradiction to speak of having a vague, indefinite idea of a certain strain, or instance of nausea. As soon as this vagueness changes to definiteness, we may and do speak of having an idea of the strain or the nausea.

Just at this point, unfortunately, where the pedagogue

may very profitably join hands with popular usage, the psychologists have in the past, for reasons of their own, dissented, using the term "idea" with widely varied connotation. Höffding, however, divides the section of his psychology dealing with cognition into two main divisions, sensation and ideation, the latter evidently covering all forms of cognition except sensation. Miss Calkins,[1] in her psychology, states that "the word 'idea' is applied to any complex experience regarded as one term in a succession." Locke emphasized the cognition side when he referred to "idea" as that term which he thought "to stand best for whatever is the object of the understanding when one thinks."

This broader usage more closely corresponds to popular usage, and means to the average teacher what it seems to mean. Consequently I have used the term in this sense, and therefore define an idea as any definite cognitive functioning.

Ideas are of varying complexity. Brooklyn is to most people a less complex idea than the idea, New York City, or New York State, or the United States. Various writers have used the terms "idea-complex," "idea-mass," "thought-mass," "systems," "circles of thought," "thought-cycles," "system of the prevalent disposition," etc., where no reference is made to any special organization of the subsidiary idea involved in the larger whole. The term "idea," as here used, is sufficiently broad to include the elaborate and complex idea-mass, as well as the simpler and more direct experience.

2. **Nature and definition of habit.** — Habit, on the contrary, is popularly used in an extremely narrow way, not that its meaning is different from that which has been implied in this book, but rather that the application of the term is limited to an infinitesimal part of the actual ex-

[1] "Introduction to Psychology," p. 150. New York, 1906.

periences to which it properly applies. The uneducated person thinks of his eating and drinking and smoking in terms of habit, and of his real or fancied personal peculiarities as habits. He does not think of his recreations, skating, swimming, hitting and catching a ball, his business calculations, and reactions as habits. Nor does he consider the movements of his eyes, the manner of reading a paper, appreciating pictures, jokes, and architecture, and much less his religious and political beliefs as habits. To be sure, many of these ought not to be purely habitual, and often are not, but habit enters in to a degree unappreciated except by the students of habit. Rousseau[1] said, "Education is certainly nothing but the formation of habits."

Even the psychologists have often made the serious mistake of classifying habit in the realm of volition, neglecting its equally potent force in cognition, feeling, and even volition itself. Even where they have defined it as a state of mind or body in which acts previously performed tend to repeat themselves in exactly the same way, they limit it to the body and external action. It is only comparatively recently that memory, at least where it is secured by repetition, has been thought of as habit. Surely it is as much of a habit for a child to secure as an automatism, $6 \times 9 = 54$, even if there is no perceptible external action (whatever the motor tendencies), as it is to take his pen in his right hand as he starts to write.

Stout treats of habit in two ways: (1) as in process of formation, (2) as fully established. In this second sense, as a fully established organization of experience, habit is, then, following closely Maher's definition,[2] an acquired

[1] Quoted by Radestock, "Habit in Education." Trans. by Caspari, p. 5. Boston, 1897.

[2] Maher, "Psychology," p. 388. The definition is his except for the word "automatic," which seems to me needed.

aptitude for some particular mode of automatic action. This includes habits of decision, of feeling, or thought. It includes the habits which "have us," and the habits "we have," as Professor Ladd happily phrases it.[1] They evidently may be neuro-muscular; they may be highly intellectual or central in character.[2] All training and all efficiency are based on habit. Spontaneity or involved accommodation, in the main, functions only as accessory to and built upon previously acquired habit, and as itself contributing to further improvement in adjustment, which, if permanent, is habitual.

Habits, like ideas, may be tremendously complex, and make themselves over into systems, one reaction[3] setting

[1] Compare Aristotle on Memory. Also his Ethics, for extension of term in general.

[2] Compare Kussmaul, "Störungen der Sprache," p. 34. Leipsic, 1885 (3d edition). "Das Band, was die Einübung unserer Central-organe zwischen dieser und jener Stationen der Empfindung, Vorstellung, und Bewegung knüpft, nennen wir Gewöhnung. Stationen, die gewohnt sind mit einander zu correspondiren, beantworten sich ihre Depeschen sehr prompt, wehrend sie die von anderer nicht oder nur zögernd und unsicher beantworten. Es sieht ganz so aus, als ob Erregungen, die wiederholt von einem Punkte zum anderen sich fortpflanzen, Widerstande aus der verknüpfenden Bahnen zur Seite schöben und die Wege freier, glatter und geläufiger machten."

[3] The word "reaction" is used here as elsewhere to indicate those responses to situations which are not involved in pure receptivity, while the term "stimulus" is used of a change external to the organism, the words "stimulation" or "excitation" of those changes in the organism which are receptive and serve to waken responses. If one response arouses another reaction, it is evidently first a reaction and then an excitation. A sigh, a sound, a taste, a touch, an odor just perceived, a muscular movement, may all serve separately as stimulations for the respective reactions of shuddering, singing, smacking of the lips, turning the head around, sniffing, or for stepping up to the next stair.

off the next in order, and so on; but as a rule they are so specific, at least in the reaction to which the term "habit" is applied, that no occasion has arisen for such terms as "habit-masses" to correlate with "idea-masses." Ideas differ infinitely in complexity. Habits differ only to a very limited degree in the length or amount of what is considered as one habit.

3. **Philosophical objections answered.** — The pedagogue has not merely to reconcile these uses of terms, but the philosopher interposes his objection that ideas and habits are treated here as though they were real entities or objective existences. He seems to be right; ideas do not exist except while we are having them; habits do not exist except while some act is being performed in a habitual way. But on the other hand, the following illustration may clear up the situation. I left my watch the other day at the jeweler's to be cleaned. Several times in the next few days I caught myself either feeling for it in the accustomed place, or about to do so. Is not this tendency of mind to reach toward my vest pocket upon occasion as real as the watch itself? May it not be treated as an existent somewhat? Moreover, is not the *idea* I have of my watch as real as the watch itself? Does not one whole school of philosophers regard the idea as *the* reality? The watch does not function except as I look at it, hear it, or handle it. Is it unreal because it ceases to function when no one is thinking about it?

Again, a curious inconsistency lies in the fact that the philosopher seems willing to acquiesce in this objective treatment of habit, but balks at it as applied to the idea. Surely the idea is in essence no more and no less a function than habit. If not, where does the idea-habit come in? All functioning implies something to function and conditions under which the functioning takes place.

There is a further answer to the philosopher's objection which might be made. This book could have been written, and the functional point of view now rendering so much aid to the pedagogue could have been preserved throughout. The difficulty was simply that it was impossible to preserve it without a very frequent use of circuitous phrases which, though more satisfying to the philosopher-psychologist at the present moment, would end in a desert of words which would render the book unserviceable at precisely the point where I trust it may prove to be of genuine value. As long as something must exist which corresponds either to what we call ideas, or to what we denominate habit, there can be no serious objection to ridding ourselves of verbal incumbrances and circumlocution by referring to these phenomena, that is, ideas and habits, as though they existed.

4. **A psychological objection.** — Another type of psychologist raises an objection which is more serious. He claims that habit enters into all thinking, that all forms of cognition are largely infusions of habit, each experience combining with this fundamental habit-basis certain elements, developments, ramifications, adaptations, or superimposed associations. The writer believes that this is true, — that, in general, being given sight impressions, we see what we are in the habit of seeing, that we remember what we are in the habit of remembering, imagine, judge, and reason very much as we are in the habit of imagining, judging, and reasoning. But even the acknowledgment of the complexity in cognition does not invalidate or devitalize the utility of the distinction between idea and habit, since whatever may be the elements involved, either the superimposed associations or developments predominate in the attention in the guise of an idea, or they are unnoticed, and the experience is therefore dominated by habitual reactions.

It must be admitted that this difficulty is perplexing to the teacher. It has already been referred to in the case of idea-habits, and will be again. One of the reasons for entering in this chapter into the detailed study of this difference is not only to show the basis for the principles derived, but also to enable the teacher to distinguish between that which is predominantly idea or predominantly habit. In various parts of the book occasion has arisen to refer to the difficulty in the hope of removing it. In the writer's experience, and that of others who have tried it, few cases offer any real difficulty after some practice.

Even though these words (ideas and habits) were denied me in the sense I have used them, I should still have to insist on the distinction, for practical purposes in teaching, between that which may be described as a relatively completed organization which is automatic and consists of units functioning in a fixed succession (habit) and that which represents an organization of associated experiences, which is regardable from many points of view and is capable of indefinite addition to and arrangement or rearrangement of its unitary elements (idea).[1]

The contrast of definitions in the preceding paragraphs, however, fails to bring out into very positive relief important differences which will appear upon close observation, — differences which will also serve as a basis for important principles and to clarify a distinction otherwise hard to make.[2]

[1] See also footnote on p. 60, where the purpose and function of this distinction are further discussed.

[2] The following may serve to enlarge our general point of view in advance of the detailed analysis: "Habit is a serial reproduction of associated ideas and movements which has by frequent repetition become a matter of mechanical finish." Lindner, "Encyklopädisches Handbuch der Erziehungs-kunde." Leipsic, 1891. The "first requirement of education is that the pupil shall ac-

5. Habit an automatism.—The first essential difference is that habit is automatic in character.

It is *an automatism.*[1] It is self-moving in a definite direction. Its initial features suggest only *one set of consequent* features. If a person starts to lace up his shoes, he will not stop until he has finished, unless interrupted by some new contingency. On the other hand the initial phases of an idea are *not followed by any given consequents directly.* Ideas may be variously suggested, interrupted, and obstructed. If a woman is shown a new bonnet, little automatism on her part is necessarily involved. It is impossible to say what part of the bonnet she will look at first, or how she will examine it. The second, third, and any other subsequent times she sees or thinks of it she may do so in different ways and from new points of view. Various experiences are called up at different times. Now one name or another occurs to her, under changed conditions different people are thought of as wearing that style, and so forth. One set, automatic kind of reaction appears in lacing up the shoes, while in the case of the bonnet no set form of reaction appears, but the person gets an idea now of

quire the habit of subordinating his likes and dislikes to the attainment of a rational object." . . . "Passive habit teaches us to bear the vicissitudes of life with such composure that we shall hold our ground against them, being always equal to ourselves, and that we shall not allow our power of acting to be paralyzed through any mutation of fortune." Harris, in the Introduction of Rosenkranz's "Philosophy of Education," pp. 32 and 33. Appleton, 1890.

"Habit is the tendency of an organism to continue more and more readily processes which are vitally beneficial." — Baldwin, "Mental Development in the Child and the Race," p. 476. Macmillan, 1903.

[1] This is not to say that automatisms do not enter into ideas. but to emphasize the fact that the idea is based *not* on one but many, the succession of which is not to be predicted.

the bonnet, now of its advantages or disadvantages, now of persons wearing it, now of the occasions or times of the year when it is most suitable, — all according to the point of view or the general mental tendency at the time.

6. Habit serial, ideas approachable from many points of view. — This illustration brings us to the second important difference. Habit is always a serial affair.[1] Even when in its simplest form of a single unitary experience, it always suggests a related experience. The swinging back and forth of the hand until the shoe is tied is not only automatic but represents a series of subsidiary reactions. No such series appears in the consideration of the bonnet. Not only is the experience as a whole lacking in settled automatic action, but, even granted an established avenue of approach, it is almost immediately forsaken, interrupted, crossed or recrossed.

The elements in the habit series may be little separate habits combined into a more complex one, just as buttoning one's waistcoat must be a more complex habit than just buttoning one button, though that in itself would be a habit as soon as it is done automatically. The consciousness of finishing with one button acts as a stimulus for starting on the next. An idea, on the other hand, may be called up automatically and yet itself not be a habit. Thus a certain sound may suggest automatically a whistle. But the kind of whistle suggested, — locomotive, factory, steamboat, tug, bicycle, or automobile, — and the trains of thought set in motion will vary greatly, even when evoked by the same sound. There is no established series. If an idea could be repeated in exactly its original form, it would be either an extremely vivid impression, and therefore likely to become habitual, or it is already an idea-habit.

[1] Compare footnote, p. 60.

7. Habit's function to preserve unchanged, the function of the idea to adapt itself. — In the third place, habit represents a conserving tendency of mental life. That is, after it has once been established, it tends to remain unchanged, always produced in response to the same or a similar suggesting stimulus, always characterized by the same reaction. Desirable forms of action thus become permanent. They persist, though there is a period during the inception of the habit when there is a certain amount of experimentation and an attempt to improve on it. It is these attempts to improve which put a good golfer "off his game." When some mere chance variation of his stroke becomes habit without his noticing it, it may take him weeks to get back to where he was before he made this unfortunate attempt to improve. The habits once established beyond this experimenting stage, become fixed, and change only as new conditions *compel* new adaptations. The function of habit, then, is to conserve in its original form a definite reaction. There is a constant warfare between the forces of *habituation* and those of experiment, adaptation, or, as Baldwin [1] would say, *accommodation*. But let habit once gain the upper hand, and experiment soon retires from the field, though seldom finally.

The idea, on the other hand, has just the opposite function. Its usefulness consists in its ability to adapt itself and become modified in accordance with additional points of view. It may be combined in synthesis with other ideas, or it may be resolved into its elements by analysis, or it may be fused with other similar ideas, or applied to some given situation either by deduction or analogy. In short, its very function is to change, to be modified. Of what use would our idea of St. Petersburg, Westminster Abbey, banking, auto-

[1] See "Mental Development in the Child and the Race," pp. 214 ff., and 476–480. Macmillan, 1903 (2d edition).

mobiling, sailing, be if we were obliged always to think of them in exactly the same way, from the same point of view, including just so much and excluding always the same amount. The truth is, such words represent, to use Herbart's figure, masses of ideas relative to which we have accumulated some knowledge, and hope to get more. We may with comparative freedom modify them, add new material, subtract wrong impressions, and in general organize the ideas we have into some useful form of practical import to us, even if it be of no more satisfying kind than that teachers cannot afford to neglect the study of school sanitation.

8. Habit disregards detail and feeling, ideas accentuate both. — In the fourth place, as a habit becomes more and more fixed, we lose sight of the details involved. Think of the detail a pianist must master in the way of smaller ideas and habits of manipulating the keys. But in rendering a difficult but ennobling piece of music, all of these years and steps of practice are lost to consciousness in the enjoyment of the harmonies now easily rendered, as symbolized by the little dots on the lines of the staff, which form the stimuli that keep the automatic processes going right. But in the course of the practice there must have been many a detail to learn or smaller automatism to acquire before the mind was freed for more involved functioning. With this disregard of detail the feeling element tends to fade out, the enthusiasm of the boy's first successes at swimming fades away into the staid matter-of-courseness which characterizes his swimming in later life. Our disappointment, too, over failure to perform long-tried tasks begins to lose its vigor in the late efforts and may even sink into a dreary sort of satisfaction in the mere effort, regardless of results.

Here, again, in both phases the idea is radically different. We must have detail to get any satisfaction or service from

our ideas. A vague idea of New York City will prove useless in assisting a person to find his way around the city. The more details the better the organization may be, and the better the organization the more completely it must cover the details. Even an abstraction loses its vitality and becomes mere empty verbiage if completely isolated from its data. To one unacquainted with electricity it is not particularly edifying to know the principle that the strength of the current varies directly as the electromotive force and inversely as the resistance.[1]

In contrast with habit, the feeling accessory of the idea tends to rouse itself or vary, the longer the idea is in focus, as new aspects strengthen or weaken the prevailing mood. A small boy may hitherto have left the impression on his teacher that he was "mean" and wanted to annoy her, when quite unexpectedly and willingly he puts himself out to do her a special kindness. The idea of this act might at first give her a feeling of pleasure, but the contrast with other acts of a different nature may lead her to other feelings. Then there may ensue an oscillation back and forth in consciousness now of thought of the old acts and now of the new, each with its appropriate accompaniment of feeling, until

[1] The fact that this principle may be used automatically by an expert in electricity as an idea-habit, and that many concepts may be used practically as idea-habits does not invalidate the distinction. When ideated as objects of attention, they carry with them their manifold of association, suggestion, etc., *i.e.* both detail and feeling.

The author of the following must have appreciated not only the detail but the conscious attention involved in ideation:—

"The centipede was happy quite,
Until the toad in fun
Said, 'Pray, which leg comes after which
When you begin to run?'
This wrought her mind to such a pitch,
She lay distracted in a ditch,
Considering how to run."

the teacher has finally organized the new act as representative of the child's real feeling, and those others as an outcome of an instinct to tease or of some other native propensity — good in itself but often ill adjusted.

9. **Habit minimizes attention and fatigue, ideas increase the amount of attention and fatigue.** — With these differences in detail and feeling a fifth characteristic of the habit, as distinguished from the idea, is closely connected. In case of a habit, if the attention strays, a resulting movement or even mental reaction is likely to proceed as well and very likely even better than if it had remained definitely centered on the reaction. For the whole tendency of habit is to release the attention while at the same time increasing the accuracy and reducing the fatigue characterizing the movement. An engineer just struggling with the problem of starting a new fifty-horse-power marine engine proved to be an interesting subject for observation. He knew his engine and what was to be done, but there was still just enough of the knack to be acquired to make large drafts on his attention, and the release of the starting lever required an accuracy in the time of the movement to slip it off that demanded the utmost *qui vive*. The resultant fatigue in the muscular effort was considerable; but in a short time a few turns and a little attention sufficed.[1] He had gained the "knack." An habitual act calls for less attention and therefore entails less fatigue than the same act would if not habitual. Where ideas influence movement, they do it directly through habit or by minor alterations or modifications of previous habit paths. If effort is required, as is usual, to keep the idea in the focus of consciousness,

[1] James makes this minimizing of attention a function of habit. Compare Baldwin: habit "means loss of oversight, diffusion of attention, subsiding consciousness." "Handbook of Psychology," Feeling and Will, p. 49. Holt, 1891.

fatigue is necessitated, and the more attention is demanded the greater the attendant fatigue. But if an idea is involved, and it is necessary to keep *many* phases of it in mind, it is evident that the conscious attention must be proportionately increased. A lawyer, in convincing a jury, must keep an elaborate case in its various phases constantly before him. The amount of effort, attention, and mental fag involved is necessarily very much greater than is expended by the engineer of many months' experience with the same engine.

10. **Habit implies repetition, an idea may be gained through one experience.** — Sixthly, habit implies repetition, practice, traversing over and over the same neural path. Even in the case where a left-handed child just beginning to write is told that he must write with his right hand, and is so convinced of its advisability that he never writes again with his left hand, he has not yet acquired a habit. He has an idea firmly grasped, and a habit is sure to grow out of it, but not until he has written often enough to start in automatically with his right hand can he be said to have formed this habit.

An idea, whether it be gained more directly through the medium of the senses, or through judgment or reasoning, may be learned, as is evident enough, through one experience only. The victim of a railroad accident needs no repetition of the occurrence to get an idea of what such an experience is like.

11. **Habit specific, ideas variously considered and modified.** — Seventhly, a habit is, properly speaking, always specific, although this fact does not necessarily preclude the possibility of a number of specific habits having certain parts of a neurone pathway in common, nor does it preclude the possibility of one habit furnishing a suggestion which may easily become a habit in a new situation. For ex-

ample, a boy may form the habit of always hanging his hat on a certain nail in school without necessarily developing the habit of hanging it on a certain nail at home. On the other hand, it may suggest and in time produce the fixed reaction at home. So, too, a habit of keeping papers clean may suggest to the boy the desirability of washing his hands morning and noon before school. Washing his hands ought very readily to suggest washing his face as well, and so the habit is extended to several different reactions. It is not likely that it will lead to the habit of cleaning his nails or washing his ears, unless by a very gradual process and added suggestion. Some of our psychologists in their perhaps justified opposition to formal discipline in theory seem to have lost sight of this possibility of the use of neurone pathways in common and the possibility that by suggestion one pathway may set into action a similar one in a new but similar situation. This is especially important in its bearings on habit, as implied both in moral conduct and school discipline, and will later be taken up again.

The point that needs emphasis and has perhaps been overworked in exceptional cases is that habits always apply to single paths of reaction. They are specific, not general. Moreover, they can be regarded from only one point of view, as the habit series works only one way. The habit of saying the alphabet forwards is an entirely different habit from that of saying it backwards. The idea, on the other hand, is not well defined as to associations implied. Its beginning and end, its implications are variously prominent or obscure either in part or as a whole. It may be regarded from many points of view and is subject to modification (not always desirable) according to the point of regard.[1] It is

[1] In answer to the objection that ideas are also specific, attention must be called to my point of view as including the *time*

said of Russell Sage that he consulted a lawyer as to his chance of winning a certain case; the lawyer listened to him and said, "Yes, you have a very good case there." "Thank you," said the shrewd financier; "that's the other man's side of it." There are usually many points of view involved in ideas, whether they be derived from legal cases, objects presented to the senses, or plays of imagination and reasoning in general. Moreover, the point of view modifies sometimes seriously the nature of the idea; and it requires much shrewdness to keep free from bias or prejudice in favor of the point of view most acceptable.

12. **Direct reflex and instinctive basis for habit, none for ideas.** — The remaining distinction (the eighth) between habits and ideas is one which is of pronounced significance in teaching. It consists in the fact that there is an extensive background of reflex and instinctive hereditary possibilities of reaction, which form the basis of the child's first movements. On these or out of these he gradually develops all the subsequent special habits or habit combinations so necessary and useful in enabling him to adapt his reactions to the varying complexity of his environment. Thus, out of the general exuberance of hand, leg, and body movements made when the child sees a bright object, he gradually comes to select the specific movement of stretching out his right hand and grasping until this becomes habitual whenever a sufficiently attractive incentive is offered.

Although it was long believed that there were native or innate ideas from Plato's and Herbart's ethical ideas to the acceptance of the mathematical axiom as native, it is now

element. The chameleon has no specific color, red, green, etc., if *periods of time are involved*, although at any given moment it has a specific color. Habit, on the other hand, is comparable rather with the form of the chameleon, which is specific any time after it has matured.

generally agreed among psychologists that there are no native or innate ideas. Nor is there an original, ready-made function by which ideas may come to consciousness. But the same background of reactions fundamental to the development of habit is also fundamental in that it not only furnishes data for the interpretation of the outside world but none the less for the interpretation of itself. Thus Herbart's ethical idea of benevolence is easily accounted for, if it is admitted that any form of reaction instinctive or otherwise may in part at least be brought to consciousness as knowledge first of all, as an act, perhaps, but sooner or later as a reaction having certain qualities (in this case a feeling quality) in common with other reactions. Our feelings and our reactions become (or may become) therefore conscious experiences of the cognitive type, on the basis of which new intellectual experiences are gained by analysis of or by combination of elements, or by mingling analytic and synthetic processes.

13. Restatement of the eight points of difference.[1] — The

[1] In this antithesis between idea and habit I am conscious of raising numerous questions in the mind of the psychologist who looks at mental development by analogy with neurone complication. I am myself an advocate of that type of psychology, and recognize, therefore, that the idea itself includes numerous habits. This, however, is not saying that the ideas are habits. Just as long as you have such a complexity of habits involved in the idea that at different times they function in different orders and in varying limits, the total consciousness involves *no such serial fixed character* as we have postulated for habit, and the *complete automaticity of the idea is not assured.* When an idea reaches a stage in consciousness where it is serial and fixed as a single automatism from beginning to end, it has been transformed into a habit.

Of course, too, this automaticity, serialness, and fixedness of habit are necessarily more or less relative, that is, ideas may have them to some degree, but habits *must* have them in high degree. The reason for making the distinction is its great importance for

following contrast may serve as a summary of the distinctions emphasized: Habit is automatic, serial, and fixed. Habit disregards details with their feeling accompaniments. Habit minimizes attention and fatigue. Habit implies repetition, is specific, and is built up on a reflex and instinctive basis of action.

Ideas, on the other hand, are not automatic, except as habit enters into them. Ideas imply a mass of smaller elements not regarded serially but according to point of view. Ideas function only by change, modification, analysis, and synthesis. Ideas emphasize the detail and also the feeling element. Ideas increase the amount of conscious attention, effort, and fatigue. Ideas may be gained through one experience, are considered and modified from many points of regard, and are not based on any native knowledge.

14. Principles of education involved in these differences. — We are now in a position to consider more definitely the fundamental differences in method which are necessitated by these differences in the nature of the two functions. We may think of the typical habit as analogous to a row of dominoes standing on end, each successively ready to topple over its neighbor in its fall, or as a series of digits in their conventional order, and the typical idea as like a spider's web or the jumbled mass of streets in an old European town. The row of dominoes and the stereotyped order of digits stand for specific neural paths. Evidently, to get these neural pathways established, they must be traversed

the teacher. Teaching of the type to produce the most effective habituation is not calculated to produce the most efficient ideation, adaptability, or originality. The bringing to consciousness a complexity of associations as completely as possible is different from bringing into play a muscular or mental series involving the minimum of consciousness. But these are the typical forms of activity involved in the aims of teaching.

again and again. As habit is to be automatic, self-carried, and fixed, repetition is again the essential. If habit is serial, the same elements should invariably precede the next in each case, and the habit may often be learned in sections. Since habits are fixed, care should be taken at the outset that the right ones be established, so that no unlearning or corrections need be made. If they tend to disregard details and the feeling accompaniments, let it be certain, before it is too late, that the function of the detail in making good adjustments and the function of feeling in warning against poor adjustments and guiding toward good ones have both served as fully as possible. If effort of attention is to be minimized, let it not be until the reaction is safely established in its most efficient form. Since habit is specific, any given habit should be *the* one adapted to the situation for which an adjustment is desired and not a blind attempt to make real some abstraction. And again, inasmuch as habit is based on reflex and instinctive activity, the nature of that basis and its usefulness deserve most careful study.

The main point in the case of the idea must be, first of all, to add definitely to its nucleus; and secondly, to elaborate its elements into an orderly system. Also in ideation attention should be held more or less closely to its focus on the idea or its elements and associations. Detail and feeling in this idea-process must each continue to function fully. The idea must function as a whole, no matter what the outlying association may be that called the idea to consciousness, and the mind should be able to survey this idea from many other points of view than the first one suggested. Moreover, ideas must undergo a constant reconsideration, criticism, or tendency to revision, whether by way of adding or subtracting to the sum total of elements composing them or by way of reorganizing them into forms more

suitable for purposes of adjustment or application. If effort of attention is desirable, the various incentives and aids to attention should be studied. If fatigue is increased, greater precaution should be taken in exercises dealing with, idea-getting, that the child may have the energy to expend.

15. **Habit-getting as a sequel to idea-getting.** — It must be borne in mind that these are distinctions which hold where the idea is essentially an idea and where the habit is purely an automatism. Where an idea is to be transformed into a habit, the mental processes must begin with the qualities of the idea, and later the qualities of habit will grow out of it as the idea slowly crystallizes, loses its variability, fails to be analyzed or associated in manifold ways, becomes serial and automatic. This process may take place soon or extend over days, weeks, or years, according as its complexity and the opportunity for practice vary. In such a habit the methodology of the idea must precede and then be followed by the methodology of habit. Many a teacher has taken a period for bringing out an idea, followed it up with exercises for home work, and devoted the next period or more given that subject to drilling on it without once being conscious that he first taught an idea and then tried to fix it as an automatism.

16. **Transition of ideas into habits.** — In many cases, however, the ideas are so easily and automatically [1] gained as to need no special emphasis on the method of acquiring them and to sink into insignificance beside the task of getting the habit. In teaching a person to ride a bicycle the ideas necessary may be taught perfectly in five minutes. But the person, if an adult, is not likely to acquire the necessary habits satisfactorily in less than five hours. What was happening during the four hours and fifty-five minutes?

[1] See Chapter II.

Merely the formation of certain habits. "Turn the handle bars the way you are going to fall" is a direction simple enough, but to do it soon enough and not too soon or too vigorously is not so simple. So with the only other directions necessary: "lean over to the side opposite the one you tend to fall," and "keep pedaling." Easy enough, to be sure, but it takes a long time to get the habit after the ideas are taught. To get the ideas is not the problem. They will be gained automatically with any sort of teaching. The habit is the difficult thing, and were it attended by occasional unpleasantness, such as characterized first attempts at riding the old-fashioned high wheel, or such as attends early endeavors to swim, the result would not be so readily attained.

Again, in the child's early learning, which is almost wholly habit-forming, the part played by the few hazy ideas he may have succeeded in clearing up out of the mist of his experience is so limited, and the ideas are so detached and scrappy in character, that they are almost entirely negligible, as far as his early efforts are concerned.

17. **Habits as precedent to ideas.** — In general, man in his development made a new adjustment, afterward found it satisfying, and endeavored to repeat the acts involved. It may have been a chance combination or a fortunate circumstance that suggested and provoked the original reaction; but when the advance was attended by pleasurable feeling or appreciative knowledge of the desirable attainment, at least the immediate antecedents of the action were in time also enkindled with consciousness. Thus an act (it may be habitual) often becomes father to the idea, or conscious knowledge thereof in its various phases. The child learns to walk and talk as complicated adjustments long before he has formed any idea of doing so or of the nature of the reactions he is making. The child's first naughtiness is

ethically no worse than his first good acts. In both cases he reacts according to his inherited structure. He experiments unconsciously for better adaptations. Where the experiment results favorably, he is commended. Where it is unsatisfactory, he is condemned. Sin came into the world not as idea, but as adjustment.

Since habit-forming, then, precedes idea-getting in the child's development, and since in a large percentage of cases the idea part of the more complicated habit-getting is acquired automatically, and furthermore since the methods of imparting ideas have already been treated in several books on general method,[1] it has seemed both logical and practical first to set forth systematically this neglected field in the science of education. Consequently the discussion of teaching as discipline and drill is made to precede that of teaching as instruction.

18. **Summary.** — An idea, as here defined, is any definite product of cognition. This is not far from the popular usage of the term, and is in effect sanctioned by the usage of eminent psychologists. It is thus made to include not merely simple, but also complicated, idea- or thought-masses as well. The term "habit" is commonly used in far too narrow a meaning. It enters into man's whole mental and physical existence. As a fully established organization of experience, habit is an acquired aptitude for some particular mode of automatic action.

The philosophical objection to speaking of ideas and habits as real existences is answered by showing that the usage is figurative, and that all function presupposes some-

[1] As will be shown later, the method of instruction needs elaboration from the standpoint of modern psychology and especially to be freed from a formalism detrimental or impossible in good teaching and decidedly at variance with the automatic processes, the importance of which has been indicated in Chapter II above.

thing to function. The complicated mingling of idea and habit and action is a more serious difficulty. It forces us to look for the predominantly automatic, and is the chief reason for making a detailed study of the distinction between idea and habit.

Eight points of difference are noted: —

(1) Habit is automatic or self-carrying; ideas are subject to hesitation, obstruction, interruption, and varied suggestion.

(2) Habit is serial; ideas function with features variously prominent and lacking in settled continuity. The habit series may involve lesser habits themselves serial in the elements comprising them.

(3) Habits are the product of a conserving tendency, — are relatively fixed; the very function of the idea is to modify and adjust itself to new experience and situations.

(4) Habits tend to the disregard of and ideas to the emphasis of details and the feeling tone of experiences. The details are vital to the organization of ideas, but are in the way of the finished organization of habit.

(5) Habit minimizes conscious attention and fatigue. The more involved and the less familiar an idea may be, the greater the amount of attention and of consequent fatigue necessary for complete functioning.

(6) Habit is the product of repetition; ideas may be gained through a single experience.

(7) Habits are always specific, although we may and do sometimes denominate as habit a whole class of similar automatisms. Ideas, even of concrete experiences, are gained through the medium of similar past experiences with which they are fused or classed, and in which the separate experience often loses its identity, while consciousness may be definitely focused on the total result.

(8) Habit is developed out of native tendencies to act;

there are no native ideas. On the other hand, native reactions may be brought to consciousness (ideated) and thus contribute indirectly to ideation, incidentally rendering these native tendencies doubly important.

Certain typical sorts of procedure in method are plainly implied by the above comparison: —

(1) Habit can become automatic, self-carried, and fixed only through repetition.

(2) One member of the habit series must invariably (not intermittently) precede the next. Subsidiary habits, however, may be gained before the including habit is sought.

(3) Care should be taken that only right habits be established.

(4) Detail and feeling are not to be lost until a satisfactory reaction has been made.

(5) Effort of attention must not lapse so long as needed for correct action.

(6) No blind substitute for the specific reaction adequate to the situation must be accepted.

(7) The instinctive equipment of the child must be known.

On the other hand,

(1) Ideas must be increased by added association.

(2) Their elements must be elaborated into a more or less orderly system.

(3) The idea should function as a whole, including its feeling connections.

(4) Ideas must be viewed from many points of view, must undergo criticism and revision.

(5) Attention is to be encouraged in as many directions as contribute to the idea.

(6) Precautions should be taken against excessive fatigue.

Idea-habits begin as ideas, and more or less slowly crystal-

lize into habits. In many instances the methodology of imparting ideas must therefore precede that of habit-getting. In fact, this must always be the case except in the numerous instances where the ideas or the habits themselves are gained automatically. Many ideas are not grasped until the habits they represent have been established.

The methodology of habit is a subject never before treated in detail.

CHAPTER V

The Basis of Habit-Formation

"Habit, second nature? Habit is ten times nature."
— Duke of Wellington.

1. **The development of habit from instinct.** — Any one who has come into contact with infants has noticed how few, how crude, and how uncontrolled are their early types of movement. The baby sitting on the floor stretches his hands toward some alluring object. Venturing too far, he falls prostrate. As a result of his fall, however, he gets near enough to touch the plaything sought. His success in reaching the toy leads him thereafter to repeat the same method of reaching for things, until he becomes quite proficient. The habit of stretching himself out on the floor has developed out of the crude instinctive reaching.

Later it may be noticed that sometimes, when he fails even by this method, he makes an involuntary movement of the knee and, putting his weight upon it, throws himself forward by chance at first, but soon automatically coming within range of the desired object. This may be the first form of creeping. Again instinct has become habit. This phase of locomotion is gradually improved upon until it becomes a fairly direct and effective means of moving about. But the development does not rest there. Before long the child reaches instinctively for things above him. He seizes hold of the side of the crib or the side of a heavy chair, and pulls. This pulling is accompanied by reflex movements of the feet. After a number of efforts the feet reach a position favorable to the getting-up process, and after many struggles with combined pulling of arms and straight-

ening of legs, the baby stands. The fortunate combination is afterward repeated and soon becomes a matter of course, that is, of habit. Soon the standing is itself varied by various instinctive movements, such as jumping up and down in glee, moving slightly back and forward, stepping off to the side, and turning round. These begin as very tentative modifications of the act of standing, but are slowly extended according as they accomplish desirable results, until finally the baby walks.

One little girl, a year old, was able to shake her head very proficiently from right to left in imitation of her parents, but her efforts to imitate the up-and-down (bowing) movement resulted only in the twisting of the head to the right and left, possibly a little obliquely and with nothing like the freedom with which she executed the "no" movement. A month later, as a result of watching a toy goose that swung its head vertically, she developed the ability to move her own head correspondingly. Thus the instinctive, again under favoring circumstances, has become habitual movement. So, too, in handling a book the child begins by very crudely fumbling at the pages, but gradually more and more facility is gained until the process of turning leaves has been relegated almost entirely to the automatic.

What is the secret of this modification? In a word, it is the satisfaction gained. Man is so constructed that he cannot help noticing and remembering distinctively pleasant and unpleasant experience. The pleasant he notices and endeavors to continue. The unpleasant he notes but tries to avoid. In learning to reach, to creep, to stand, to walk, or to nod, habits have been formed from combined native and acquired tendencies. Given a specific sort of situation, the habit reaction follows mechanically. That is, in each case a particular situation has become associated with a definite reaction. The resultant satisfaction, espe-

cially since it leads to the repetition of the connection, is a great factor in developing the association.

These habits are representative of hundreds of habits formed in a similar manner during infancy, in course of school life, through youth or adolescence, and to a limited extent even in later life. One's slant in handwriting, form of signature, choice of words, devices in using implements or performing various acts, — all represent in some degree at least instinctive or chance variations from established forms of movement. The result in each case is habit.

2. **The development of habit out of habit.** — Continuing the illustrations above, it is plain that modification does not cease when an instinctive has been transformed into an habitual movement. Indeed, it has already been insisted that these modifications are made very gradually but progressively, so that instinct appears, strictly speaking, only at the beginning. All the rest of the modification is from one habit to another, though new instinctive tendencies are often combined with these habits in the new adjustment. Instinctive stretching out of hands leads to habitual reaching and grasping. Instinctive leg-and-arm movements combine in habits of creeping. Instinctive pulling up results in a habit of standing, and soon of balancing. The latter is modified into various habits of walking, running, side-stepping, jumping, dancing, skating, and so forth. Professor Thorndike thus formulates the principle — " In any given situation the thoughts, feelings, and acts manifested will be those to which instinctive tendencies, or capacities, and also previously formed habits impel one." [1]

Another remarkable instance of the gradual modification and ramification of instinct into habits is furnished by

[1] Compare Thorndike, "Elements of Psychology," pp. 199–204. Seiler, New York, 1905. Also Kirkpatrick, "Fundamentals of Child-study," pp. 82 ff. Macmillan, 1903.

language. Here the instinctive elements are practically unrecognizable in the complex of linguistic abilities shown by the child even of school age. The child's first instinctive babblings become modified into words used habitually as a means of expressing certain ideas. These words gradually combine themselves into phrases and sentences, according to certain habitual forms which are found to convey meaning, and hence to give satisfaction. It is hard to recognize the instinctive babblings of the child in the forceful and finished appeal of the skilled public speaker. They have been selected and combined in thousands of ways which have in turn been re-selected and recombined again and again into the wonderfully involved forms of a well-developed language. The basis at the beginning was instinct; later it became almost exclusively habit.[1]

[1] See for general accounts of the formation of habit and the modification of experience in animals:—

Morgan, "Habit and Instinct." London, 1896.

Jennings, "Behavior of the Lower Organisms," pp. 253–259. Macmillan, 1906.

Washburn, "The Animal Mind," pp. 205–269. Macmillan, 1908.

For detailed accounts of the formation of specific habits in animals, see Yerkes, "Dancing Mouse." Macmillan, 1907.

For additional accounts of habit-forming in children, see Major, "First Steps in Mental Growth." Macmillan, 1906.

Shinn, "Biography of a Baby." Houghton, Mifflin, 1900.

O'Shea, "Language and Linguistic Development." Macmillan, 1907.

Johnson, "Researches in Practice and Habit," *Studies in Yale Psychological Laboratory*, Vol. VI., 1902, pp. 51–103.

For accounts of habit from action in adults, see Swift, "Mind in the Making," pp. 169–218. Scribners, 1908.

Bryan and Harter, "Telegraphic Language; the Acquisition of a Hierarchy of Habits," pp. 346–375, *Psychological Review*, Vol. VI., 1899.

Judd, "Practice and its Effect on the Perception of Illusion," *Psychological Review*, Vol. IX., 1902.

3. Nature of instinct. — Instincts have been defined as guiding impulses which are native and aid the organism in adjusting itself to its environment. The teacher should not only acquaint himself with the most useful classes or kinds of instinct, but he should know at least the important habits that grow out of these in the child's early years. Professor James, in the chapter on Instinct in his "Principles of Psychology,"[1] gives a very concise treatment of the subject. He calls attention to the fact that there is always a physical stimulus and a motor response along paths of connection natively transmitted, with a certain tendency or impulse to make use of them. A squirrel of my acquaintance carefully secreted a nut under a corner of a rug at the house where he had called. Some associations with nuts, based on prenatally established nervous connections fundamental to secreting the nut, led him to perform the act. At his next visit some time later he looked for the nut, *i.e.* the sight of the place where he had secreted the nut called up the associated muscle movements necessary for finding it, and he seemed disappointed at its disappearance. In each case the situation was followed by the response usually appropriate according to a tendency inevitable, unless supplanted by another or inhibited.

Whether these native capacities reach their complete development before birth, or are gradually and automatically completed by nature after birth, is not important. The teacher needs to concern himself most with those instinctive tendencies that are actually at his service.

Instincts represent reactions which have proved themselves useful in the conquest of environment, and are so well established that an appeal to them is much more certain

[1] See James, "Principles of Psychology," Vol. II., pp. 383–441. Holt, 1890.

of response because of their impulsive character than an appeal to the more prosaic and recently formed habit paths.

4. **Instincts important in training children.** — The larger the lists[1] of available instincts at the teacher's command, the greater are his chances of influencing the child. Lists should be worked out by the teacher independently, and no classification which is not carefully made by the teacher from his own point of view can be of very great value.

Those classes of instinctive activity which seem to be of chief importance to the teacher both in instruction and discipline are: imitation, play, construction, curiosity, or investigation, collecting, ownership, love, sympathy, sociability, expression, manipulation, ambition, emulation, rivalry, love of approbation, pride, independence, defiance, courage, æsthetic and ethical appreciations (as in approval and disapproval), tendencies to avoid inactivity and pain (whether mental or physical), pugnacity and fear.

The list hardly needs very much elaboration for the teacher or parent, since hundreds of illustrations must suggest themselves as instances of one or another. *Imitation* is a most powerful factor in life, witness fashion, precedent, and authority, in the life of the adult. Every act striking enough to catch the eye is likely to be imitated, and every sound reaching the ear to be attempted. Miss

[1] Such a list Professor James has presented and described severally in the last half of his chapter. See pp. 403–441 of his "Principles of Psychology." Holt, 1890.

Professor Ladd says that a young squirrel has as many instincts as there are separate things that a young squirrel can do. It is evident that even such classification of instinctive tendencies as follows in this book must be forced and incomplete. On the other hand, its great practical usefulness to the teacher, whether used consciously or unconsciously, is indisputable.

Haskell [1] has described a list of a thousand or more concrete cases.

The natural energy of the child is released by *play* often with great satisfaction on the part of the player. It finds multitudinous forms, falling back on the other instincts for reënforcement. It needs no illustration.[2]

The *constructive* impulse is fundamental to the traits of originality shown by the child. Some opportunity for the exercise of construction in the outer concrete and coarser physical processes is the prerequisite of useful mental construction. This instinct deserves wider recognition and encouragement throughout the formative period, the kindergarten and manual training schools being at present the chief agencies to use it intelligently.

The child's questions and his general *curiosity* lead him to accumulate knowledge and adapt himself in many ways that would otherwise never be discovered. The very nuisance he makes of himself is evidence enough of the value of this impulse.

The *collecting* instinct leads him to gather together objects of all sorts, from postage stamps, cigar labels, cigarette pictures, buttons, and so forth, to collections of minerals, plants, birds, insects, and so on. It is fundamental to classification, and the orderly arrangement of knowledge, besides playing the part of the New England attic, a gathering place for that which may "come in handy" in ways unforeseen.

Ownership, the instinct to appropriate as one's own, is not only very evident in the young child, but is funda-

[1] Haskell-Russell, "Child Observation; Imitation." Boston, 1897. For general treatment of imitation, see Tarde, "Laws of Imitation," New York, 1903.

[2] See Groos, "Play of Animals." Appleton, 1898. Also his "Play of Man." Appleton, 1901.

mental to both *thrift* and to thieving, to legitimate accumulation of wealth and to swindling. It is manifestly worthy of wise direction, and dangerous if undirected.

Love and *sympathy* on their instinctive side prompt to actions furthering the welfare of those toward whom they are directed. These actions imply neither deliberation nor purpose so much as a spontaneous unpremeditated impulse. A little girl's whole-souled giving of her pocketbook and all her money to the desolate Armenians was a beautiful illustration of an instinctive reaction. Whenever simple childish expressions of love and sympathy are anything more than passive experiences in which self-enjoyment is the prominent feature, and whenever *active expression* regardless of the self predominates in these manifestations, they should be classified as instincts rather than feelings.

Sociability is variable, being strong in some children from the first, but being counteracted by shyness in others. Its value is linked with that of imitation and moral appreciation.

The *expressive instinct* is the root of all tendencies to act, to move muscles, but it particularly applies to speech tendencies, gesture, drawing, painting, making things, and the like. It may be counted upon for valuable assistance in habits of that sort.

Manipulation, the instinct to handle objects apparently for the mere sake of handling them, is an extremely valuable early instinct, giving the child an abundance of information for future use, especially in assisting the eye to do the work of the hand, and so doing away with the trouble in later experiences of actually getting touch impressions. If an object is wet or sticky, hot, cold, corrugated, smooth, furry, rough, pointed, dull, and so on, it is almost always a sight impression which tells us conveniently how the object would feel if we did touch it.

Of the many forms of *ambition, emulation, rivalry,* and *love of approbation,* little need be said. They are incentives that have stood the test of years. They have been proved to have their uses and their abuses. Emulation has been given a bad name, but it is certainly capable of doing beneficent work.

Pride and *independence* are related. There are forms of pride which should be inhibited. Pride in really worthy traits of family, friends, or one's self is a good and useful motive. Independence is the source of considerable power, and, where it is in danger of being lost, should be encouraged.

Defiance is the courage of despair, buoying the child up when he bids fair to be overwhelmed by difficulties. It needs to be directed against difficulties, however, with deeds rather than words, and not against the persons or influences working for the child's welfare.

Courage is likewise an instinct useful in a variety of ways, but capable of distortion into bullying and foolhardiness if not directed toward worthy ends. Brute courage, the rush or stand against danger, is not alone the function of this instinct. The rush or stand against temptations, wrongdoing, moral weakness, is no less a phase of this instinct.

Æsthetic and *ethical appreciations,* while strongly tinged with feeling, have characteristic reactions in expressions by word or deed. The act or utterance of commendation or condemnation is in itself largely instinctive. Play should be given these feeling tones with reference not only to the child's own acts, but also to those of others, whether found in those about him, in fiction, or in history.

The importance on the one hand of freedom, and on the other of comfort for the development of mankind, or, in other words, the importance of the *tendencies to avoid inactivity and pain* are indicated by the child's resistance to all at-

tempts to limit the scope of his activity and by his shrinking from pain.

Pugnacity, like courage, has its uses and its abuses. Moreover, it too has a very definite application both to the problems of life involving brute force, and those situations demanding mental persistence and energy.

Fear [1] is a familiar and a much perverted instinct. We usually fear most the situation least dangerous, while those situations most to be feared are lightly regarded. This instinct needs direction on a more rational basis, and especially with emphasis on the fear of recognized wrongdoing, fear of sinking to a lower level, fear of failure to attain the highest possible. Fear of physical pain must be regarded as inferior to these other forms of fear in its claims for recognition.

This extremely cursory treatment [2] of the important instincts will serve to call attention to them, will suggest examples, and at the same time will point out the direction the development of instinct should take.

5. **The overlapping of instincts.** — Besides these, all of the typical native forms of mental activity may be considered instinctive in so far as they function automatically and without guidance. All of these instincts represent *classes* of instinctive [3] reaction, which may overlap; but there is an advantage in having the multiple classification, since it is likely to suggest a possibility that might not otherwise be discovered. For example, play often covers imita-

[1] The author has treated of the uses and abuses of fear in an article in the *Outlook*, Vol. LX., pp. 234–236.

[2] For more extensive treatment of the separate instincts, see James, "Principles of Psychology," Vol. II., pp. 403–441. Holt, 1891. Also Angell, "Psychology," pp. 294–309. Holt, 1905. Also Kirkpatrick, "Fundamentals of Child-study." Macmillan, 1903.

[3] Angell, "Psychology," pp. 308–309. Holt, 1891.

tion, construction, sociability, emulation, expression, and pride. But one would be twice as likely to think of the constructive instinct, for example, if it were thought of both on its own account and in connection with the play instinct.

6. The classification of instincts. — In spite of the difficulty arising out of this overlapping, the concrete list of instincts should be organized in some classification. Professor Kirkpatrick[1] classifies instincts under six heads suggestive both of their variety and importance: (*a*) the *individualistic*, or self-preservative (with emphasis on the feeding instinct, fear, and pugnacity); (*b*) the *parental* instincts, including protective instincts and instinctive display of adornment and accomplishment; (*c*) the *social* instinct, emphasizing the companion-seeking instinct, the sympathetic, love of approbation, and the altruistic; (*d*) the *adaptive* instincts, — namely, imitation, play, and curiosity; (*e*) the *regulative* instincts, covering moral and religious impulses; and (*f*) the *resultant or miscellaneous* instincts, prominent among which are the collecting, the constructive, the expressive, and the æsthetic, with mention of the rhythmic and migratory instincts.

Whether one uses this excellent basis of classification or another patterned more nearly after the old classifications of emotions into egoistic, social, intellectual, æsthetic, and moral, may not be of vital importance; but it is important that the teacher have at his command as large and complete a list as possible of the most usable of these fundamental impulses.

7. Three principles derived from the duration of instincts. — The usefulness of instincts must depend largely on their persistence as well as their impulsive character. We must therefore find out what becomes of them.

[1] "Fundamentals of Child-study." Macmillan, 1903.

Instinctive tendencies may remain unchanged, may disappear, or may be modified. It is necessary, therefore, to observe three principles in availing ourselves of them: (*a*) Make use of them before they disappear. Many a boy has lost ambition, perhaps never to regain it, because conditions for years seemed to furnish absolutely no opening. By the time he has the opportunity to spread his wings, the ambition is practically dead. (*b*) Let those that are harmful perish of disuse, permitting only those that are useful to remain unchanged. Ambitious children often work themselves up into a highly nervous condition, fearing that they may not be promoted with their classes. Removing the child from school temporarily throws this ambition into disuse. This neglect is best effected either by the removal of the stimuli or associating disagreeable consequences with the instinct. The substitution of another instinct assists constructively in the removal of undesirable instinctive reactions.

It must be explained that instinct is never positively harmful under ordinary conditions; it is at worst relatively not so good as some other form of reaction. Men have killed themselves through inordinate ill-adjusted ambition. The instinct needed modification to meet the limitations of physique, and perhaps of mental capacity. It should have been adjusted to meet the conditions under which it worked. These were evidently abnormal in that excessive fatigue and possibly illness did not safeguard, as they usually do, an impaired physique. With less ambition or a more reasonable pursuit of it, this instinct would have been highly beneficial. No dependence can be placed on instincts under abnormal conditions, such as peculiar circumstances attending the situation or perverted specializations of the instinct.

The third principle serves only to lead up to two others. (*c*) Improve with any modifications possible those instincts

that do not of themselves make perfect adjustments. Since very few fulfill this requirement, by far the widest use of instinct is through modification. How modifications are made must next be considered.

8. Two modes of modifying instinct. — Instincts are therefore a sort of raw material utilized sometimes in nearly its original form, but usually, if not always, the original impulse has grafted upon it some new reaction or motor response, and so becomes habit. These modifications of instinct or of habit may be of two kinds: (1) They may be secured by selecting certain satisfactory reactions for repetition, as in the case of the baby's movements[1] in reaching, creeping, standing, walking, gesticulation, first speech intonation, and so forth. (2) These modifications may take the form of combinations[2] or complications of several movements, as illustrated by the ease with which complicated movements take care of themselves in writing or in framing sentences. However, each of the elements combined here was originally learned by selection long before the combination took place.

9. Principles following from the dependence of instincts on stimuli. — Three possibilities follow from the dependence of instincts on their stimuli: (*a*) The stimuli may be furnished and the instinct preserved. A boy who is forced to mingle with well-dressed boys, while his clothes are extremely shabby, is in danger of losing pride. The teacher may help him earn a good suit of clothes, or at least cultivate his pride in some possession that he has, such as good looks, courage, or brains. (*b*) The stimuli may be removed, and the instinct thus perish of disuse. The hunting instinct will be lost if it is never brought into service. The city

[1] Compare page 71.

[2] Compare James, "Talks to Teachers on Psychology," pp. 41–43. Holt, 1896.

boy who never uses a gun will find it more trouble to carry than it is worth. The country boy would carry it all day for the mere chance of a shot. (*c*) The stimuli may be preserved, but the reaction modified or adapted so as to make a better adjustment (virtually grafting a habit on an instinct), or the stimuli may be somewhat modified so as to induce a better adjustment. Fear, for example, needs adaptation. When it leads strong men to trample weak women in a panic, the reaction needs decided modification. Instead of reaction in a wild stampede, the terrifying excitation should lead to reaction in which the most prominent feature should be the consideration and assistance of the weak.

From the impulsive character of instinct, it follows that it can be supplanted only by forces of equal impelling power. The simplest way of inhibiting one instinct is therefore by substituting another. In one instance a child's fear of a muff was overcome by tossing it up and down, and thus enlisting his play instinct. We have as yet no scale of the relative values of different instincts.

10. **The child's basis of habits.** — As for the early habits acquired by the child, only a few records throw any light at all on this problem, and the student is perforce obliged to find a child to observe in these particulars, getting a few suggestions, perhaps, from the studies of Preyer,[1] Perez,[2] Miss Shinn,[3] and others. Probably the best way to sum up or classify observations and notes on the child's formation of different sorts of habits would be as habits of functioning

[1] Preyer, "Senses and Will." Appleton, 1888. "Development of the Intellect." Appleton, 1889. "Infant Mind" (an abridgment of the other two). Appleton, 1896.

[2] Perez, "First Three Years of Childhood." Bardeen, Syracuse.

[3] Miss Shinn, "Notes on Development of a Child." Berkeley, California. Also her "Biography of a Baby." Houghton, Mifflin, 1900.

through (*a*) sense processes and processes of (*b*) imaging, (*c*) judgment, (*d*) reasoning, with (*e*) the affections, and (*f*) the voluntary and the motor processes. This follows in some degree the ordinary psychological classifications.[1]

The suggestion[2] has been made that habits be classified according to various levels into (*a*) those whose strength depends on the recency of the performance of the act; (*b*) those arising from experiences of unusual intensity; (*c*) professional or technical habits; (*d*) those due to long-continued operation of similar environmental influences; and (*e*) hereditary habits (or instincts, as we should call them).

But this is open to the objection that the connections and implications of each class are not clear, and while the first, third, and fourth are unimportant as a basis for habit-getting in children, the fifth class is not made up, strictly speaking, of habits.

11. **Summary.** — Slight modifications or changes in application of instincts often become permanent when found to be pleasant. Similarly habits may be modified and rendered more effective for given situations, since all actions are outgrowths of inherited or previously developed tendencies. The importance of knowing the basis is therefore evident.

Instincts are guiding impulses which are native and aid the organism in adjusting itself to its environment. They begin with an excitation, and end in a motor response. Since they represent reactions which have proved themselves useful in the conquest of environment, they have a demonstrated value.

[1] Tracy's "Psychology of Childhood" may offer some suggestions in this direction. Heath, 1896.

[2] Andrews, *American Journal of Psychology*, Vol. XIV., pp. 142–145.

In the training of young children the following instincts are most important: imitation, play, construction, curiosity or investigation, collecting, ownership, love, sympathy, sociability, expression, manipulation, ambition, emulation, rivalry, love of approbation, pride, independence, defiance, courage, æsthetic and ethical appreciations, tendencies to avoid inactivity and pain, whether mental or physical, pugnacity, and fear. In any enumeration, there will be overlapping, since all the terms are used of classes of response. A double association for any instinct doubles the chances of using it and emphasizes its importance.

It is important that the teacher acquaint himself with as many of these fundamental impulses in the concrete as possible; but assistance will doubtless be rendered by some form of classification under which a large variety should be grouped.

Instincts may be transitory, or they may persist either unchanged or modified. Accordingly they must be used before they disappear; they must perish of disuse or by inhibition through substitution, if harmful; they must be modified, if ill-adjusted. Selection and combination are the two possible modes of modifying either instinct or habit. The stimuli of instincts may be (*a*) furnished, (*b*) removed, or (*c*) the consequent reaction may be modified. One instinct is best inhibited by another.

The classification of habits early acquired may be made as habits of functioning through sense processes, processes of imaging, judgment and reasoning, the affective, the voluntary, and the motor.

CHAPTER VI

Important Phases of Establishing Habits

"For use can almost change the stamp of nature
And either curb the devil or throw him out
With wondrous potency."

—Shakespeare.

Given the basis outlined in the last chapter, what are the main lines of procedure in establishing habits?[1]

1. **The teacher's preliminary action.** — Certain preliminaries must be taken into consideration. First, as in the old-fashioned recipe for rabbit stew, "catch your rabbit." That is, decide upon what you wish to incorporate in the child's reaction. Secondly, determine what stimuli or satisfactions lead most readily and directly to the reaction desired; and, thirdly, know definitely the nature of the reaction which is most characteristic of it. To illustrate the first point, — if a teacher is to teach long division, it is evident that he must decide whether the quotient is to be put opposite the divisor, under it, or above the dividend. The second consideration should now interest the teacher.

[1] Here, as earlier in the book, it is difficult to express tersely the thought of helping some one else to develop a habit. There is no greater evidence of our neglect of the subject than is found in this fact. Logically, we ought to be able to speak of teaching habits to children as we do of teaching them ideas. Practically, the word has been seldom so used. We may impart ideas but not habits, instruct in knowledge but not in conduct, inculcate moral principles but not behavior. I notice, however, that Dr. Seeley speaks of "inculcating habits" in his "New School Management" (Hinds and Noble, 1903). I find myself gradually adopting the more or less cumbrous word "engender."

It will not take him long in this case to determine that a concrete eye-stimulus will lead most readily to correct position of the quantities, while the nature of the reaction (the third consideration) is equally clear. He can make the form concrete and exemplify the reaction by writing down one quantity, then a line, then the other quantity, then another line or not, according to the form of setting down the figures selected for the habit.

If the teacher cannot or does not think out the relative value of these possibilities at the outset momentarily at least, he can be but a blind and vacillating leader of the blind.

2. **Automatic preparation.** — This is not the same as saying that all are blind teachers, who do not *consciously* decide on the habit they wish to teach, determine the stimuli leading to it most readily, and know definitely the nature of the reaction. The same law that made it possible for the baby to select and make habitual the movements necessary for reaching a bright-colored ball makes it possible for the teacher to select and make habitual preliminary decisions and determinations relative to the situation confronting him with a demand for immediate action; and many teachers will confess to rapid guesses, — in one instance at some effective means of drill, in another at some stimulus necessarily producing a certain reaction, and, again, at the nature of the reaction itself. Automatic action of this sort is desirable in the teacher as saving wear and tear, and even adding to the efficiency of results. But it should be watched to see that bad practice is not creeping into the automatisms through carelessness or unobserved variations.

Other teachers know that they do not make such analyses, either at leisure or spontaneously. To such, all habit-teaching must be one tremendous confusion. Their only hope of progress consists in developing an ability of this sort.

3. **The four phases of habit-getting.** — All this is necessary to get what Professor Bagley calls focalization on the part of the child. How can a teacher explain to a child or demonstrate to him a certain way of reacting unless he has picked out in advance the habit, its stimuli, and characteristic reaction? Even if he relies on imitation, he must act out all of these, or fail. The first phase of habit-getting is to acquaint the child with the nature of the reaction as definitely as possible, — *to help him develop the idea of the habit.*

This degree of preparation is incumbent upon the teacher before the real work of establishing habit is begun. It has been assumed that something has been selected for teaching which is worth while. This selection would necessarily be based on the instincts, capacities, and interest of the child. The discussion of this basis is not a part of the present plan, since here not the curriculum but the teaching process is the object of our study. What then can be done to make the child the more ready for the new reaction? First, we may start in *to work up his initiative,* his ardor. We may make him as eager to acquire the habit for himself as we are for him. When we know what we want him to do, and as soon as he knows what he is expected to do and is eager to get at it, we are ready for our second step of *practice,* or repetition, — not any formal or time-serving sort of repetition, but an earnest, whole-hearted seizure of every opportunity presenting itself, and an alertness to make opportunities when they do not present themselves. It must be what Bagley calls a "repetition in attention," not careless, shiftless, or formal, but active, living, painstaking practice. The only danger left, if the child is well started on a definite line of reaction in response to a definite situation, is that he may stop or lapse. A section of the methodology of habit (exclusive of the preliminaries) must therefore deal with modes of *guarding against exceptions,* lapses, and

modifications. To this end a renewal or rekindling of his initiative may contribute much, but other devices may be fully as important. *These three phases*, combined with the *selection and demonstration of reactions*, constitute the four essentials of habit-getting.

4. The formulations of Professors James and Thorndike. — The student of Professor William James's books will doubtless recognize the likeness between the results of this analysis of the situation and Professor James's formula (after Bain)[1] for the formation of habits. This similarity is, as the writer has endeavored to show, inevitable. No exposition of habit has forsaken or can forsake this point of view without losing in point, practicality, and closeness of relation to the fundamental nature of habit. Professor Thorndike has expressed the law on which habit depends as follows: "The likelihood that any mental state or act will occur in response to any situation is in proportion to the frequency, recency, intensity, and resulting satisfaction of its connection with that situation or some part of it, and with the total frame of mind in which the situation is felt."[2]

It will be readily seen, as is shown later, that each of these factors may be placed appropriately in the above classification. Frequency is naturally provided for in the methods of practice; recency serves as a factor both in practice and in eliminating exceptions. Intensity may be, like resulting satisfaction, a factor in getting initiative.

When pleasant, it may contribute to practice, or it may, when it is unpleasant, contribute to the methods of eliminating exceptions. The "frame of mind in which the situation is felt," if favorable, is one filled with eager-

[1] Professor Bain's statement is quoted on p. 177 of this book.

[2] Thorndike, "Elements of Psychology," p. 207. New York, 1905.

ness and initiative to embark upon the formation of the habit, and so bring about the necessary "situation." If a frame of mind is unfavorable, it must be so because of its lack of initiative or disposition to work out the situation necessary for forming the habit. Professor Thorndike's greatest contribution comes from his insistence (*a*) on the importance of the resulting satisfaction, and (*b*) on the fact that every reaction, whether instinctive or an adjustment through a modification of instinctive or habitual paths, must be an adaptation to a definite "situation." We say neither to ourselves nor our pupils: "Go to! We will now proceed to form a habit of keeping our desks in order." On the contrary, we become disgusted with ourselves or them. We convince ourselves of the advantages of this habit, while at the same time we set about making such reactions as will make those advantages clearer and more prominent. *If our memories and our resolutions are strong enough and our temptations are not too strong,* we succeed in forming orderly habits.

5. Other important formulations. — Professor Horne[1] gives five maxims for the "forging or breaking" of habits: —

"First, act on every opportunity.

"Second, make a strong start.

"Third, allow no exception.

"Fourth, for the bad habit substitute something good.

"And fifth, summoning all the man within, use effort of will." These again will be seen to fit into the scheme of James, since the fifth is merely an elaboration of the second and also of the first, while the fourth applies only to breaking habits.

Professor Bagley[2] formulates his law of habit-building,

[1] Horne, "Psychological Principles of Education," pp. 300, 301. New York, 1906.

[2] Bagley, "Class-room Management," p. 16. New York, 1907.

perhaps too concisely, as follows: "Focalization of consciousness upon the process to be automatized, plus attentive repetition of this process, permitting no exceptions until automatism results." Although the "initiative" (James), the "strong start" (Horne), is not included in this formulation, incentives are provided for in the discussion of the problem of attention. It is certain that they must be given a much more general application in educational processes. Bagley's contribution is really his insistence upon getting before consciousness the thing to be done, not blindly telling a child to get a habit of doing some sort of thing quickly, but how it is to be done so as to secure the facility desired. Another strong point [1] is his advocacy of "*attentive* repetition" or "repetition in attention." Mere repetition is far from a successful way of forming habits, — that is to say, the habits intended. It may form some not intended. Attention converts what may be only formal or perfunctory practice into actual practice.

Dumont divides the conditions essential to establishing habits into two classes — the conditions appertaining to the excitation (which he also calls the positive), and the conditions imposed by nutrition, which he considers *negative.*

In connection with the conditions of excitation, he says there must be sufficient *force to reach the organ* whose movements are to be facilitated. The conditions must besides be able to apply *power to overcome the resistance* of other organs to the increase in movement in this one organ. Lastly, they must supply intensity enough to enable these *other organs* to *change* and *establish* themselves in an

[1] Compare also Andrews on habit, in *American Journal of Psychology,* 1903, Vol. XIV., p. 149. "The important conditions favoring the development of habit, are repetition, attention, intensity of the experience, and plasticity of the nervous system." See also pp. 167-174 in Chapter IX.

equilibrium with modification (augmentation) of the organ exercised. If this last condition can be met completely, a habit may be secured at the first stroke.[1] But more often the excitation lacks sufficient force, and is obliged to make up for that which it lacks in intensity by frequency of repetition. By each repetition obstacles are removed, and the energy on each next occasion will penetrate and modify strata further and further removed. *The prolongation of an excitation* has on account of the renewal of force from without an effect similar to its repetition, and for the same reason repetition is most effective when occurring at short intervals. If the intervals are great, opposing forces destroy its effects.

Relative to the conditions of nutrition, Dumont emphasizes the need of healthy and comfortable physical conditions. The flow of blood must permit adequate assimilation and "disassimilation." It is useless to study when *fagged* out.

Attention as a factor is explained by reference to both positive and negative conditions. An excitation, to produce an enduring effect, must completely absorb the attention so that contrary or distracting impressions may leave no trace, the flow of blood to the organs corresponding to those impressions being obstructed.[2]

The earliest good formal statement for habit-formation I have found is that of Curtmann:[3] "A child is accustomed

[1] This is Dumont's position, — The *present writer* is not willing to admit that habits may be secured by a single reaction. No matter how certain it is that the reaction will be repeated, the ease, facility, automaticity, which help according to our definition to distinguish habit, will not be found.

[2] Translated and condensed from Dumont, "De l'habitude," *Revue Philosophique*, Vol. I., pp. 341–343.

[3] Quoted from W. J. G. Curtmann by Radestock in his "Habit in Education," pp. 5–6. Trans. by Caspari. Boston, 1886. See

to an action by giving it the opportunity to practice this one especially, and by removing any opportunities for other actions colliding with it; thirdly, by heightening the pleasure in the action by a union of pleasant impressions with the deed, and, on the other hand, making the conflicting habits unpleasant by uniting them with pain."

Here again are found the main points of emphasis. It is doubtful if either Bain or James had read this passage from Curtmann. But the coincidence in the main points selected is evidence of their importance in methods of habit-getting.[1]

In one of the most recent German treatises on educational theory, Dr. Barth[2] says: "Habit has at its disposal, as indicated above, only the mental mechanism, and can function therefore only with the aid of supervision, by working upon the feelings (rewards, punishments, and the direction of the emotions), and through examples, according as the various sorts are developed." Unfortunately, however, the chapters which follow, covering supervision, rewards, punishment, cultivation or repression of emotions, and example are too brief and lacking in connection to offer any system-

also Curtmann, "Lehrbuch der Erziehung," p. 133. Heidelberg, 1846.

[1] It may be interesting to compare Herbart's statement, "that the function of training is to support, to determine, and to regulate; to keep the pupil on the whole in a tranquil and serene frame of mind; to arouse him occasionally by approval and reproof; to remind at the proper moment and to correct faults." The description, which at some length follows this brief statement, enables one to see that Herbart has made some provision for the main divisions of habit-getting, except (very oddly) repetition.

Herbart, "Outlines of Educational Doctrine," translated by Lange and annotated by De Garmo, pp. 160 ff. New York, 1901.

[2] Barth, "Die Elemente der Erziehungs- und Unterrichtslehre," p. 45. Leipsic, 1906.

atic scheme for the formation of habit. Even habit itself is regarded from the traditional narrow point of view of German pedagogics, being considered under the head of the training of the will, and there only.

6. The subdivisions of the method of habit-getting. — Each one of the divisions of method here outlined involves so many devices and implications that it will be necessary in any adequate treatment to take them up in separate chapters. These will therefore treat, first, the principles involved in analyzing courses of study, lessons, and general situations to find the habits needed for the best adjustment to life and the method of demonstrating the habits discovered; secondly, they will deal with methods of getting initiative; thirdly, with methods of securing practice; and, fourthly, with methods of preventing exceptions.

7. These phases of method are not necessarily a succession. — Right here a grave error must be guarded against. It must not be thought that these subdivisions of method represent a fixed succession of stages in the development of habit. It may be appropriate to speak of successive stages of the process of imparting ideas, commonly called "the formal steps," but in establishing habits the word "phase" must be used instead of "stage," since there is no uniform succession. It would very naturally follow that the teacher acquaints himself with his problem first of all, but it by no means follows that the securing initiative precedes guarding against exceptions. The demonstration or explanation of the nature of the habit may precede the getting initiative, but perhaps oftener follows it. Getting initiative seems especially to pervade the whole habit-forming process. It is prominent both in getting practice and in preventing exceptions.

It must be remembered, too, that any of these phases of the teaching process may be rendered unnecessary by the fact

that in many cases the necessary initiative, the repetition, or even the preventing of lapses comes to the child automatically. In this case it is manifestly bad form to waste time and energy laboriously trying to produce at best only the same result that could be obtained without effort.

8. Summary. — As preliminaries to habit-getting, (*a*) decide what habit is to be formed, (*b*) determine the stimuli or situations evoking the reaction, (*c*) know definitely the essentials of the best reaction. A teacher may fulfill these requirements automatically without consciousness of the fact. If they are not fulfilled, whether consciously or not, only confusion results.

When fulfilled, the teacher is in position to *demonstrate the habit* and teaching may begin, involving three additional factors — (*a*) working up a strong initiative, (*b*) securing abundant and genuine practice (repetition in attention), (*c*) preventing exceptions. The recommendations of James, Thorndike, Horne, Bagley, Dumont, and Curtmann either concur with these or offer suggestions for the formation of habit which may be reconciled with the four main divisions of the methodology of habit stated above. Each of these divisions involves so many devices that it is best treated as a chapter by itself, though the method of selection of the habit by analysis either of subject-matter or of the situation is linked with that of demonstrating the habit.

These subdivisions of the general method of habit-forming are not, however, successive. They may vary widely in their order. The demonstration usually precedes the others. The initiative may be worked up first of all, or at various points, fairly pervading the whole process. Nor must it be forgotten that the automatic learning processes may at any of these points relieve the teacher from effort worse than wasted and from danger of *ob*structing instead of *in*structing the child.

CHAPTER VII

The Selection and Demonstration of Habits

"He fixed thee 'mid this dance
Of plastic circumstance,
This Present, thou, forsooth, would fain arrest:
Machinery just meant
To give thy soul its bent,
Try thee and turn thee forth, sufficiently impressed.
— Browning.

1. **Scope of the chapter.** — As has already been indicated in the preceding chapter, the scope of this one is to cover, (*a*) how habits are to be discovered in subject-matter, (*b*) how they are to be studied, both as to their stimuli and their reactions, and (*c*) how they are to be demonstrated to the child.

2. **The selection of subject-matter assumed.** — It is not intended to discuss these points by showing how habits are related definitely to the aim of education or by indicating the specific importance of any habit in the organization of experience. This selection of subject-matter is assumed at the start and, moreover, is usually specified by the authorities above the teacher as far as the course of study is concerned. Usually those same authorities have little to say about discipline and even moral training, leaving the teacher to infer what he pleases in that regard, within the broad limits of what is allowed.[1]

It must inevitably happen that the teacher, when con-

[1] Some of the habits needing especial notice are later treated in Chapter XII.

fronted with actual teaching, will have a fairly definite notion of the general nature and scope of the subject-matter to be taught. In city schools the courses of study for the various subjects in the various grades indicate often too specifically the nature and scope of the subject-matter to be covered in a given term. In country schools, while a free rein is often given as far as prescribed courses of study are concerned, the traditions of the locality influence decidedly both teaching and school management. Thus a written or unwritten course of study is shaped, which may sturdily resist the new almost without regard to its practicality. "What was good enough for me is good enough for my child" is an implied premise in the reasoning of the mob, and it will be found from pulpit to pew, from capitalist to laboring man, from college professor to washwoman. Only a few of the progressive see that, if the race is to advance, if our country is to keep its advantage, if labor and capital are to be better adjusted, our children must have advantages such as their fathers did *not* possess. Accordingly, except in isolated instances, even a subject like nature study, which might contribute practically to the farmer's culture of the soil and raising of live stock, finds no welcome. Even greater resistance is met to the introduction of studies which would tend to equip the girl with the various forms of knowledge and skill essential to her happiness later as a wife and mother. Cultural studies, or such as contribute to finer forms of feeling or enjoyment, are generally reduced to the minimum.

Hardly a manufacturing city in the country thinks of drawing and painting as other than fads and frills, in spite of the fact that the selling quality of one product over another is often due solely to its superior artistic design or packing.

Consequently in both city and country the courses of

study are more or less fixed, and the teachers select from them certain material which is to be covered during the term and accordingly divided up into large sections or natural divisions. Then each of these is subdivided until certain units, usually thought of as lessons, are reached. These lessons are sometimes preparatory, sometimes review, now setting forth new truths, now drilling on old knowledge, now inspirational, now mechanical, here organization, here application.

In many instances the relation between the subject-matter and the ultimate aims of education is carefully thought out, and the relation of possible subject-matter to those ends considered. When this preliminary work has been done, however, no matter what the aims that lead to the choice of subject-matter, it will always be found that either some definite knowledge, the formation of certain habits, or the cultivation of certain feelings is the immediate aim in the choice. Of these the last resolves itself into one or both of the others, since the cultivation of feeling is in no way possible without securing appropriate ideas or appropriate motor states, and since the latter are the outcome either of ideas or of habits.

It is assumed, then, that the teacher knows in the main what he wants to teach; that he has to teach a lesson of some sort involving habit, *i.e.* a practical problem to be solved. This may include ideas also, but at any rate it must involve at least one habit that the child is to form. This assumption may be more or less difficult for the Herbartian who studies in detail the selection and arrangement of subject-matter before he gets to the point of working out the detailed adjustment of subject-matter to the learning process. From his standpoint we are beginning after the preliminary selection and arrangement of subject-matter have been completed. It is an open question which

is the more logical, — to assume that subject-matter may be selected without detailed acquaintance with the process of teaching it, *or* to assume that method possibilities may be exhaustively treated without a detailed consideration of the subject-matter. 'In contrast to the Herbartian point of view, the latter course has been taken in this book.

3. **Habit and incidental practice.** — In many cases another difficulty will be met right here. The teacher may say it is evident that a certain habit must be secured if this lesson is to be really learned, but it is impossible to give the amount of practice necessary to secure its formation in the time allotted. If this is true, the habit will probably be fundamental enough to recur, or to be easily made to recur, in subsequent lessons. Certain it is that, if these lessons taken together are unitary in leading toward implanting the habits, such fundamental habits will be much more likely to be secured than if the teacher makes no special provision for them beyond a momentary exertion at first.

The teacher either of the facts of the multiplication table, or of Latin inflections, or of chemical formulæ, who does not realize that these are to become habits, and does not teach them, whether separately or incidentally, in such a way as to insure the incentive and practice necessary for making them automatic, should thank his students for whatever valuable results he may attain. They are due rather to the good habits of study inculcated by former teachers than to any merit of his teaching.

4. **The analysis of the lesson into ideas and habits.** — Having decided, then, that a particular lesson is to be taught, our first principle of action, as already suggested in Chapter III., is to analyze the lesson into its possibilities. It must be made up of ideas to be taught, or habits, or both; and inasmuch as ideas and habits are not taught in the same way, but with very different stress of emphasis, it is

incumbent on the teacher first to analyze the lesson and discover which features are to become habitual and are therefore to be drilled upon, if the lesson is to be really taught.[1]

In this analysis of the lesson the important principles have already been laid down in Chapter IV., and need rather illustration than new formulation here.

1. Look for the automatic element. In pointing off in multiplication and division of decimals, is it the ability to reason out what should be done or the habit of pointing off correctly that is important to the young child, supposing this reasoning and the correct habit could not both be secured?

2. Look for the serial. In the series of operations necessary for tying a cravat, each follows the preceding in an invariable succession. If no special order is important, but a group of ideas or movements can function as well beginning at one point as at another, then no *one* habit is fundamental, though perhaps there are several involved. On the other hand, if a poem or statement is to be memorized exactly as it stands, the whole thing makes one habit comprising a more or less extended series.

3. Search for elements entering into the lesson which are fixed and do not lend themselves to change. No habitual element may be apparent in a lesson on the notable victory of Captain Perry on Lake Erie, but his memorable message,[2] if it is remembered at all, must be fixed as a habit verbatim, and is no more to be distorted than is Cæsar's famous "*veni, vidi, vici.*"

[1] For an example of an analysis of a writing lesson from a slightly different point of view, see Judd, "Genetic Psychology for Teachers," pp. 161–235. Also for reading process, pp. 236–264. Appleton, 1903.

[2] "We have met the enemy and they are ours."

4. Decide whether the details and the feeling elements involved in the lesson are to be kept prominent, or to be gradually relegated to the lower levels of consciousness.

In learning to crochet or knit, one must be told first how to hold the needle and the yarn and then how to work the needle in and out in a constantly repeated series of movements. At first, interest may be definitely directed to each stitch, but finally both interest and the details of each stitch are entirely lost, either in the contemplation of the work as a whole or, more likely, in some entirely foreign train of thought.

5. Determine whether it is desirable that the attention be focused on the operation or whether other processes may occupy the mind and the process go on apparently as well. The automatic character of whistling and of mechanical processes in mathematics is nowhere more evident than while the boy is working his algebra or arithmetic and whistling a tune most of the time, *except* when he is thinking out the problem or has found some hitch in the process.

6. Discover if possible the amount of repetition implied. It would not take a teacher long to determine that a very perfect handwriting was the result of much practice. Each lesson must therefore assist in forming a habit.

7. Note whether the point of view can be changed or not. We may ordinarily think of the battle of Bunker Hill entirely from the standpoint of the American troops. There is nothing, however, to prevent our looking at it from the point of view of the British soldiery. As long as we are not bound to our past point of view and are open to new ones, our mental ability with relation to the battle of Bunker Hill is not specific, but general and subject to various lines of approach. It is a very different case from the very specific one, 16 minus 9 equals 7.

8. Look for a basis of reflex or instinctive movements.

If the child is learning to dance, his instinctive appreciation of rhythm should be made use of and made to contribute the aid it is sure to render.

5. **Complex combinations of habit.** — But in the above illustrations, cases have been taken where it is perfectly clear that habits are to be formed. Often, even when the lesson is definite enough, it is quite difficult to determine just what habits are to be formed. In many cases they defy the most careful analysis the psychologist can make, and in others they are so numerous and demanding that there seems to be no chance to get in half what is necessary. How these difficulties may be overcome may be shown better by taking a few concrete cases than by any attempt to prescribe in a general way for the varied sort of situations which may arise.

6. **The complexity and difficulty of analysis illustrated: (*a*) by a writing lesson.** — In a writing lesson, for example, the pen is to be held in a more or less definitely stated way, — the paper also, — the feet in a certain position, the body held erect, the paper to be kept clean, the copy to be followed at a certain general rate of speed, and attention paid to various directions and suggestions of the teacher aside from the lesson of the day (which may be the way of making a "Z"). All of these are habits, some practically secured already, some partially formed, others perhaps not begun.

The problem is not so hard as it seems. The children get practice every day in holding the pen and paper, in placing the feet, holding the body erect, taking a certain rate of speed, and in profiting by the suggestions of the teacher. Most of these acts are sure to become automatic, and the problem is, on the average, to get the habit of making the "Z" and at the same time to keep the children from leaning over too much. For they may

lapse from the habit of erect position either because of fatigue, or in their eagerness to get good results. A failure to keep up the practice in posture while attention has been centered on the letter "Z," or on some other minor point, has resulted in many a case of spinal curvature.

7. (*b*) **By drawing lessons.** — If a lesson is given in drawing a vase, the habits involved are not so clear at first sight as in the writing lesson just mentioned. It is evidently a lesson in habit-getting. The teacher wishes the children to get the ability to reproduce objects of that nature. What are the habits? The writer remembers well what an enigma to him as a child was the meaning of a noted illustrator who said, all that was necessary to draw well was to be able to *see*. The boy knew he could see as well as anybody, but he knew equally well that he could not draw. What was meant by seeing in this case? He had not yet observed enough to learn that often square surfaces are not seen as square, and, in fact, that forms are seldom seen exactly as they are. He had still to learn that colors are not always what one would think, and that black surfaces with a little light reflecting from them ordinarily must be drawn or represented by white, while white surfaces in the shadow must be proportionately shaded. If, now, he could use these points to just the degree necessary in reproducing objects, he would not only have a general habit of observing accurately, but also one of executing or representing accurately, the object observed. Seeing in the sense used by the illustrator covered, then, all these sorts of activity, and more. When the teacher wishes the children to draw the vase, it may be because that lesson is set by the drawing inspector or supervisor. Little will be accomplished if each child merely makes a drawing, shows it, and hands it in. He will know neither more nor less than he did before,

and will be only the slightest trifle more accurate and easy with his pencil. If the teacher has a chance to measure by noting the proportionate distances on his pencil, and thus shows the child how to measure for himself, — if from several whites, blacks, and grays he matches the light and shadow on the vase, then he will be on the way toward establishing a habit which will help him to be independent of all guessing and to find out for himself whether the vertical lines are really the proper length compared with the horizontal, or where and how much shading is needed. Consequently this lesson, though not contributing much practice, still in getting all the proportions and shades needed will contribute its mite, if we treat it as a habit lesson. It may be a continuation of one begun months before.

8. The teacher's study of the habit. — Where it is hard to discover just what habit is wanted, or where this complexity and multiplicity of habit are found, what can be done? Aside from the principles already laid down for distinguishing between the idea and the habit, the teacher should think of the lesson as if he were the learner.[1] How much of this lesson requires thinking and how much mere memoriter work or skill in making muscular movements? Or is there, perhaps, a combination of memory and muscular habit?

9. Considerations for study of the lesson in complex cases. — If there is no element distinctly of that memoriter or automatic character, then no habit lesson need be given. If some motor or memory formula is found, is

[1] The habits involved in study are very numerous and complex, when the various kinds of study are considered. For an excellent analysis of the general features of the problem, see Dr. Lida B. Earhart's "Systematic Study in the Elementary Schools," Columbia University Contributions to Education, Teachers College Series. New York, 1908.

all the habit involved just one habit, or is it made up of smaller ones either separately or combined with others? If only one habit, evidently it is the one sought.

If confusion still exists because of the complexity involved, the teacher must think over the whole course of the habit himself still more carefully to see the relative importance and the nature of the combination of habit desired. But better yet, the teacher should perform the act, if he can. If he cannot, still better, the ability should be acquired. He will then know something about that operation at first hand. In one sense, at least, he has an advantage over him who long ago gained the skill and has forgotten how it was developed.

If the studied analysis of the situation and the desired reaction is the first desideratum in complex lessons, surely the second and vitally important one is the personal exercise by the teacher of the ability he has to meet the situation with the suitable habitual reactions. No study is complete without that, if a habit is involved in what is to be taught. Whatever may be the explanation, anybody would be amused if a man hardly able to swim at all himself should attempt to teach a group of people to swim by reading copious extracts of the very excellent article on swimming in the Encyclopædia Britannica.

But with these two ways of determining with all possible definiteness the nature of the habits involved in the lesson, a number of other considerations must be joined. In this study, observation, or experimentation, certain suggestions derived from the principles already laid down will be found helpful.

In the first place, the teacher must observe himself to see in just what particular he directs his reaction. For example, in getting a young child to go up and down stairs carefully, the turns in dark places where even the

adult must be careful are especially pointed out as dangerous.

Secondly, the teacher notes what tends as separate sort of action to take care of itself, as the server of a tennis ball tosses it up with his left hand with no thought of that part of the process.

Thirdly, he tries to trace the effort of attention, *i.e.* to discover where he is forced to attend. It is evident that the child whose desk is to be kept in good order needs to think of it not all the time, but while he is putting things in or taking things out of the desk.

Fourthly, the attempt should be made to find out to just what he attended. In the above case attention must be directed to the books to see if they are evenly arranged in their places, and then to the papers and other materials, to make sure that they are likewise disposed each in its own place.

Fifthly, tendencies to inaccuracy, and *sixthly*, tendencies to hesitancy may assist in indicating the nature of the habit. The boy's difficulties in dealing with long division where ciphers appear in the quotient may easily be avoided, if the teacher recognizes the little separate habits to be established for meeting such contingencies. Similarly, his hesitation or slowness in performing an operation that should be habitual, as in the case of long division just cited, indicates an inadequacy in the automatisms at the point of hesitation, and thus attention is called to the definite point of weakness.

Seventhly, in some cases the subtraction of elements that seem to be variable may aid in centering on others which are fixed in a serial form, and hence habit.

If a child is to be taught the action of a steam engine of the old type, first subtract all the ideas relative to its appearance and application. Then teach the movement

of the piston back and forth as a result of the steam pressure brought to bear first on one side and then on the other. Next teach how the piston-rod motion is converted into the rotary motion in connection with the driving wheel. Thus are obtained the important elements necessary to a habit of thinking of the reciprocating steam engine.

10. Illustration of a study of a complex case of two-process problems in arithmetic. — Suppose, for example, the teacher has to teach arithmetic problem work involving two elementary processes. The logic of the situation would involve a number of combinations. The two different processes might be represented as follows: —

first addition, then addition
first addition, then subtraction
first addition, then multiplication
first addition, then division
first subtraction, then addition
first subtraction, then subtraction
first subtraction, then multiplication
first subtraction, then division
first multiplication, then addition
first multiplication, then subtraction
first multiplication, then multiplication
first multiplication, then division
first division, then addition
first division, then subtraction
first division, then multiplication
first division, then division.

The implication is not that the teacher must, therefore, drill and make habitual sixteen sorts of habit. The point is rather that the teacher should know that these possi-

bilities exist; and it is perhaps well that the pupils know them also, so that they can see what a poor chance they have of guessing correctly. The solution of these problems will depend, as will appear presently, on the child's powers of interpretation, on the effectiveness of his associations, and upon his ability to verify and to criticise himself.

Many teachers have only a half dozen forms in which such examples are given, and even text-books are likely to emphasize a few to the almost total exclusion of others. Children get used to the wording of a problem. This expression means add, this multiply, and another divide. "How much did they all have together" means add; "if one has" means multiply; and "how much did each have" means divide. If the teacher mixed in all of the sixteen combinations for two-process examples, such symbols would be of little service, and an understanding of the problem would have to be secured. Thus the preliminary abstract study of possibilities yields definite suggestions as to method.

But our principle that the teacher should try the process on himself is no less desirable. How is it to be done? Let the teacher find for himself an involved example of this sort dealing with unfamiliar computations. The following may perhaps serve for those not too expert in arithmetic: A double-tracked street-car line runs its cars at fifteen minutes' headway. Suppose a person takes a crippled east-bound car that is going only two thirds as fast as ordinarily. How often will the west-bound cars pass him?

Where does the teacher hesitate, and why? He may experience some difficulty in interpreting the term "fifteen minutes' headway," though the expression has a very definite meaning for the car-starter. So in many

an arithmetical problem an expression perfectly clear to the teacher is quite obscure to the child.

It may be that the teacher will not readily see the relation between the speeds of the west-bound and east-bound cars and the headway, and so will not be quite certain that he understands the real significance of the problem. Consequently the habit of interpreting problems carefully is one requisite. Having grasped the real meaning of the problem, he finds himself splitting up the problem as a whole into separate manipulations experimentally, attending especially to those which seem to promise a connection with other data. Certain words serve as keys to the solution, of which more is said below. Having arrived at the result, a habit of criticism will be found perfecting and verifying it. Indeed, this critical attitude may have applied itself to the result of the very first process. Is the result reasonable? Does the answer seem too large or too small? Can it be verified by another method? So in the above problem the answer, nine, may be proved correct by showing that the sum of the times for both cars must be one sixth longer than the normal for both, because the loss on speed of the crippled one was one third for one or one sixth of the total for both. The actual time being nine minutes, the sum of the time of the east-bound car and the time of the west-bound car is eighteen minutes. Subtract the lost one sixth, *i.e.* three minutes, from the eighteen, and it should give the headway, as it does; namely, fifteen minutes.

11. **Suggestions resulting from the study of the arithmetical illustration.** — From this actual study of what the child is to accomplish, the teacher will soon see that three habits are involved: (*a*) a habit of careful interpretation of the problem, followed by (*b*) a habit of making and trying suggested combinations until one is

found that in the first place is possible in view of what is given, and secondly supplies data needed for use in connection with the remaining facts furnished by the problem, and, finally (*c*), a habit of criticising the process and its results.

These habits cannot be taught to advantage at once. Each in turn should receive the maximum of attention. It is best, then, to start on one separately and give a number of examples for practice in interpreting the meaning. Examples that are clear and can be acted out or dramatically represented, are to be preferred to those that are more abstract.

Next the habit of making tentative combinations exhausting the data at hand, may be practiced, and finally various habits of criticising and verifying may be established. Then in a fairly definite way these separate habits are to be combined in problems which will serve to bring them together into an organization and from that finally into an habitual attitude of mind toward all problem work of this sort.

No application which does not cover all of these evident varieties of two-process problems shown on page 106 could be expected to be complete, though, given these three habits, we should expect a child to be able to solve examples of any of the sixteen kinds, whether he had previously solved one of the kind or not. If he cannot, either he has not the fundamental habits needed or, more likely, his ability to interpret is too limited.

12. **Study of the stimuli of habits.** — Another help to the teacher in studying habits is to study the stimuli provocative of the habit reaction. The interpretive habit just referred to has as its basis written, printed, or heard symbols. We used to think that the eye glanced from letter to letter, and then from word to word, but several

investigators have now shown that the eye pauses a few times in each line at points determined rather by previous habit than by the size or position of word or letter.[1] However, there is little that we can do to make the stimuli more favorable in the interpretation of problems except by insisting on time for careful scrutiny and rereading, if the problems are read by the child, and on close attention, if they are read to him.

With regard to the habit of manipulating the data, a number of stimuli should be selected for notice. In the above problem the reduced speed of one car ought to suggest finding out, if possible, exactly what part of the intervening distance was covered by the ordinary car. That result obtained ought to suggest the time it would take it to go the whole intervening distance, *i.e.* fifteen minutes. When the part traversed and the time for the whole is known, the result is easily reached, though other useless suggestions may have delayed the solution.

In almost any problem in arithmetic there is some special form of expression, such as the use of "and," "plus," and "with" in addition examples, the words "less," "away," and other words denoting separation of some sort in subtraction, words like "times," "if one," etc., in multiplication, while in division it is "what was the cost of each" (or "of one"), "how many did each (or 'one') receive," or the distribution idea in one form or another. A certain familiarity with the stimuli associated with the separate processes will give them greater suggestiveness and help bring them to the focus. Of

[1] The investigation has been well summed up, and some important additional experiments described in an admirable piece of work, "The Psychology of Reading," by Huey. Macmillan, 1907. See also Walter F. Dearborn, "Psychology of Reading." Science Press, 1906.

course these words or phrases should not be followed out except as the suggestion is seen to have at least a possible significance. Any one who catches himself getting his cue from some such word cannot but recognize its function in calling to mind the appropriate activity and the importance of putting the child in possession of such cues as far as is possible.

To be sure, some teachers may not get any such analysis as they watch themselves. The only response of which they are conscious may be a sort of automatic first multiply, then divide. A little practice, however, will give them the ability to read the main points of their mental process. And, while the analysis of the adult mind in its achievement offers no parallel to the child's mind, in its exposition of the goal of the child's effort it is at least the best the teacher can offer.

13. **The study of the essentials of the reaction.** — Aside from the help gained by a study of the stimuli, the teacher will be further helped, if he takes into consideration the essentials of the reaction in its simpler or first forms.

The reaction in the case of the first habit in the two-process problem is evidently careful absorption of all the data, giving attention to every thought or getting to work on all probable lines beginning with that which suggests itself as most probable. In the stage of verification the habit of thinking of the parallel implications and other ways of accomplishing the same or similar results, or of making rough approximations is the essential of the reactions. Comparison plays a large part in verification, and the stimulation is in this case the realization that a result has been reached or a process completed.

14. **The study of habit as involved in spelling.** — The poor results obtained in our schools in spelling are in the writer's estimation accounted for easily, if one considers

the lack of real analysis of the problem by any except the very unusual teacher. Cornman's [1] excellent study of spelling shows conclusively, that, as spelling was taught in the schools where he examined it (and those were good representative American schools), the results were no better than they were in the schools where spelling was not taught at all by devoting any special class time to the subject. Though his conclusion has to stand for the conditions investigated, would the same conclusion have followed, if spelling had been better taught, *i.e.* taught as a habit-getting process and not merely as so many separate word combinations to be learned? Teaching that does not attempt to discover the habits at the bottom of successful reaction, whether in spelling, reading, composition, or grammar, cannot teach these subjects with real success. What success there is is limited to the brighter half of the class, which always persists in learning automatically in spite of the quality of the teaching. The ability of one teacher as compared with another is therefore measured rather by what is done with the duller half of his class, and many fail in teaching subjects of this sort, because they do not realize that habits are implied in the ends sought.

Four habits [2] have usually been formed by the pupil before he spells accurately: (1) the habit of critically observing the spelling of new words as he comes upon them in his reading, (2) the allied habit of noticing where words differ slightly from his image or his expectation of them, (3) the habit of hesitating to write a word whenever its spelling may be in doubt; and (4) the habit of

[1] Cornman, "Spelling in the Elementary School." Ginn, 1902.

[2] This point of view has been further elaborated by the writer in the Report of the Connecticut Committee on English, Connecticut School Document, No. 12, pp. 44 ff. Hartford, 1904.

taking a final glance at the word just written to see that it conforms to the intention of the writer and seems correct.

Some teachers, too few in number, have been working for these four habits in their spelling lessons and have succeeded in bringing the spelling of their pupils to a high average because they have looked into their own mental processes and have discovered their working, where the emphasis of attention is laid, what the habits are in general, what stimuli call them forth, and what the nature of the reaction may be.

The spelling habits just referred to will also serve to illustrate the meaning and value of studying the *stimuli* and the *reaction*. Considering the first of these four essential habits, the unfamiliarity of a new word impresses different minds in different degrees, according as they have developed greater or less sensitiveness. Whatever it is that suggests newness is the important factor of the stimuli. The reaction is not merely looking at each letter, but comparing the appearance of the word with what would naturally be expected with other words similarly pronounced; and otherwise associating and attempting to fix the word.

In the second case, the stimulus is a vague something unexpected in the appearance of a familiar word, just sufficient to call attention, if the mind has been sensitized to such impressions; and the reaction is the attention or close observation and comparison, as in the preceding case.

In the third instance, as the child grows older the hesitation becomes less and less on words about the spelling of which he is in doubt. If he gets in the habit of halting definitely when he has any, even the slightest, tendency to hesitate, he will secure for himself a chance either to act with the fullest information he has, or to

consult his teacher or dictionary and make certain. The response to the stimulus is one of definite consultation either of his own resources, his teacher, or the dictionary.

The fourth important habit, that of taking a final glance at the word just written, has for its stimulus evidently the finished word or words in groups; and the reaction is the careful though rapid scrutiny of them as he would examine new words, and the comparison of their appearance with what is expected.

15. Demonstration of the habit to the pupil. — These examples may suffice to direct the teacher in his preparations (before the child is considered at all), and in his preliminary analysis of the problem or lesson in hand with a view to discovering the habit or habits involved, their stimuli, and the nature of the reaction. It is now desirable to consider the important means of bringing the habit as a habit to the notice of the pupil. It is obvious that before he can be expected to learn or acquire as an automatism the physical or mental reaction desired, it is necessary to explain, illustrate, or demonstrate to him what is wanted. It is often, but not always, an idea we wish him to get here. If an idea, it is usually one of the simpler sort, consisting of a comparatively small number of component elements.

The various ways of demonstrating habits are reducible to four.

16. Four important principles for demonstrating habit: (*a*) by concrete presentation. — Among the elements composing a habit are usually a number that the child is to acquire by exercise of his muscles in general, and especially those of his vocal cords in a definite order or succession. In either case the reaction must be made as concrete as possible. If it can be illustrated so that the child's

ability to imitate can be given full opportunity, the chances of success will be good.

The first principle involved is: Make the habit concrete by using actual demonstrations either given by the teacher (which is often to be preferred), or by some child who has the skill. The part that pictures, charts, models, and the like can play is only secondary. They may serve to keep before the child a basis of comparison, but are otherwise decidedly inferior to the illustration by the teacher himself, if he has studied his problem. If the habit is too *subtle* for effective demonstration in this way merely, like whistling or making a clear tone in singing a high note, the description of the sensory phenomena which may be noticed when success has been attained, may aid. Too often reliance is placed on description, it being so much more convenient to talk than to act. This is, however, the poorest sort of demonstration, as it is open to constant misinterpretation and misunderstanding, even supposing the description to be perfect; that is, free from error and omission.

17. (*b*) **By using past experience.** — Secondly, it is important to use the child's past experience and his instinctive reactions in showing him just what is wanted. A general view of the instinctive equipment of the child is sketched in Chapter V. The basis of his past experience otherwise depends so largely on environment as to make even a general sketch impracticable. Knowledge of it must be gained by a study of the child taught. In certain rural districts of New England a boy may pronounce father *făĕthăh*, and not be conscious of any error. At the same time he may be perfectly competent to pronounce correctly the sounds, *fah* and *er*, separately. In demonstrating to such a child the proper way of pronouncing father, one should pronounce it a few times

distinctly. Ask him to pronounce *fah*, until that sound is fixed, and then the word *err*, until that is certain, then *fath*, and finally *fath-err*.

18. (*c*) **By preliminary mastery of difficult points.** — Aside from these two, another mode of making clear the nature of the reaction wanted, using the term "reaction" for the whole course of the habit in response to any stimulation, mental or physiological, involves *special practice on the points of difficulty, before the habit in its entirety is tried.* The teacher knows in advance from his own study of the habit and his past experience, the nature of some of the mistakes likely to be made. This knowledge must be taken advantage of in economical teaching. Thus a certain point of fingering recognized as troublesome, may be practiced upon separately in learning to play scales on the piano or violin before the scale as a whole is tried. This preliminary practice on the point or points of greatest difficulty also serves to save for the crucial test, time, energy, and satisfaction, which would otherwise be used up or lost in drilling, when there was no need of it. How many children spend the time of their piano practice on the parts of their pieces which they do *not* know how to play?

19. (*d*) **By leading the child to actual performance of the act.** — But desirable as it is to remove all the important known points of difficulty, provision must be made for deviations from the habit reactions which are not foreseen by the teacher. Consequently the last, and perhaps most important, rule from the standpoint of even preliminary demonstration is: Get the pupil to attempt the act. He may feel that it is perfectly easy and yet find a number of unexpected difficulties. If his teacher has a chance to correct his errors before they have become fixed as habits, it may be possible to launch him at the

outset on the habit you really wish him to form. While the teacher can only foresee a moderate number of the possible difficulties the child may encounter, in his actual experimentation they are likely to appear in surprising variety. If the teacher can once secure a correct initial performance, he can stamp it with his approval and give it added intensity. If the initial action is not in accord with the desired habit, it must not only be corrected by further explanation, but there must be, so to speak, a second initial performance to make sure that the correct reaction has been secured, and also that it may be given approval. No idea can be completely mastered until it has been either expressed or applied.

With these four points in mind, the demonstration of the habit should be reasonably effective, and the principles are equally applicable, if the habit be an idea-habit,[1] since a certain amount of presentation is ordinarily involved even in habit-getting.

20. Summary. — Having decided on the lesson or series of lessons to be taught, the teacher is aided in this chapter in determining what part involves habit-getting by the following suggestions drawn from the discussion of the principles and the nature of habit: —

1. Look for the automatic.
2. Look for the serial.
3. Search for elements in the lesson which are fixed, and do not lend themselves to change.

[1] The automatic learning processes of the child may enable him to see just what is wanted of him without the application of all of these four principles. It may be that the first alone will be all that is necessary. There is room for much good judgment on the part of the teacher as to which one shall be applied first or how many; but in general all should be applied unless the teacher is certain that the children have found out exactly what is required of them.

4. Decide whether the details and the feeling elements are to be kept prominent or to be gradually relegated to the lower levels of consciousness.

5. Determine whether it is desirable that the attention be focused on the operation or whether other processes may occupy the mind and the reaction go on apparently as well.

6. Discover, if possible, the amount of repetition implied.

7. Note whether the point of view may be changed or not.

8. Look for a basis of reflex or instinctive movements.

There are two courses that may be taken by the teacher to determine with all possible definiteness the nature of the habit or habits to be taught or furthered in the lesson.

The first of these possibilities is that of thinking it over carefully, and the second (and more important) is the actual performance of the operation.

In connection with these two measures, the desideratum is alertness in discovering (*a*) evidence of direction, (*b*) automatic units, (*c*) points where attention is required, (*d*) the object of the attention at those points, (*e*) tendencies to inaccuracy, or (*f*) to hesitancy in the reaction, and (*g*) any remainder left after the ideas involved in the lesson have been subtracted.

A third mode of determining the nature of the habit in connection with the preceding is to study the stimuli provocative of the reaction; and the fourth mode consists in the study in the same connection of the nature of the reaction in its first or simpler forms.

For teaching the pupil the nature of the habit, four possibilities exist with a distinct advantage in favor of the use of as many as possible : —

1. Make the reaction concrete by actual demonstra-

tion or illustration. Description is of only secondary value.

2. Use the pupil's past experience or native tendencies as an aid.

3. Give special practice at the points of special difficulty.

4. Have the pupil demonstrate what he understands is necessary to be done, and correct any error or omissions in his interpretation.

CHAPTER VIII

The Method of Evoking Initiative

"Give me the boy whom praise stimulates, success delights, and defeat brings to tears." —Quintilian.

"He who is aroused neither by glory nor danger is in vain exhorted. Fear closes the ear of the soul." —Sallust.

1. **The meaning of initiative.** — No one has ever seen a confident football eleven waiting for the time of the struggle to begin without being impressed not only with the energy pent up in the men, but the fertility of resource and mental alertness to take advantage, to the full, of any opening or situation which may offer itself. This combination of alertness, of energy, of incentive back of the energy, and of the resourcefulness with which the energy may be used, may best be indicated by the word "*initiative.*"

It is said by the European military attachés at the battle of San Juan Hill, that the American troops showed remarkable initiative. They knew what they were after, and they scrambled up and on with commanders when they had them, but with equal enthusiasm when they had lost them, taking advantage of all sorts of cover, and of any means of getting ahead that were offered.

It is evident that if we can develop in the pupil what Professor Thorndike calls a favorable "mind-set," and if we can get him all eagerness to acquire a habit or as "possessed" to reach the peculiar degree of accuracy or facility desired as he is sometimes to show off or make a racket, we shall have no fear of his failure. But without some vigorous and impelling impetus to activity, we shall never get the energy sufficient to prevail against the

tedium of practice which, as we shall see later, is a requisite of all strenuous habit-getting. Habits do not drop from a clear sky. Nothing but a *disposition* to perform the act automatically can be gained in a moment.

2. Sources of initiative. — How then can this initiative, this enthusiasm, this high-pressure impulse, be secured in specific instances? Although the expression "getting initiative" may be used, it is not to imply the search for a reservoir. It is, rather, necessary to think of initiative as welling up in man's life in springs of conduct which must be wisely directed.[1]

Where are the sources of such energy and resource to be found? In general we may expect to find them in previously established reactions or experience. The instincts and capacities which have functioned, the forms of thought, feeling, and action, selected from those primal reactions

[1] The writer is aware that this term "initiative" is current in psychology to designate that which is manifested by a more or less decidedly novel readjustment to environment. This is essentially the use of the word made by Professor Royce in his "Outlines of Psychology" (see p. 53, Macmillan, 1904); but the latter, too, recognizes the importance of the "feeling of restlessness," of "rational eagerness," or eagerness for "rationally satisfactory change," which he makes the basis of "all that is most characteristic of our mental initiative" (see p. 331). In my use of the term it has been extended to include both underlying restlessness and eagerness. Moreover, it is referred rather to the preliminary adjustments or readjustments implied than to the actual adjustment, considered from the standpoint of the reaction only. In much this same usage the word "initiative" in a military sense, refers not to the actual running in this direction or that, but to the mental eagerness, alertness, impetuosity, and resourcefulness resulting in reactions perhaps relatively simple as far as external manifestations go. The expression, developing incentive, is too weak and mild to apply to this phase of habit-forming, though it is the term most likely to be used in the books on School Management. (See White, "School Management"; Dutton, "School Management"; and Bagley, "Class-room Management.")

which have been woven most deeply into our lives, must be the most ready, the most energetic and impelling. This truth has been summed up in the general biological law that development proceeds from the fundamental to the accessory.

3. **Self-activity as initiative.** — As soon as we attempt any differentiation of these fundamental processes, we are quickly confronted with their various phases and overlappings. There is, for example, an inherent tendency to keep going physically and mentally, an instinctive avoidance of inaction. This is what some people mean by self-activity, although as a rule it is made to cover the sum-total of the capacity of the mind for inaugurating and maintaining action, with the implied corollary that the child cannot grow except by his own activity.

But even in the various forms of self-activity, there is a great difference in the distribution of the various activities and degrees of creativity in different individuals, making a study of the individual necessary. Tremendous as is the aid of a general responsiveness as a factor in the child's development, responsive activity cannot be counted upon indiscriminately nor apart from creative activity, and therefore the subdivisions of self-activity must be studied for their more concrete suggestions to the teacher. Those who rattle around in the world-measure of self-activity are in danger of losing all sense of proportion in the vastness of space.[1]

Self-expression represents a smaller but still a very large group of activities included under the larger head of self-activity. These capacities again are not only fundamental, but are also representative of whole classes of activities, such as self-expression by sound, self-expression by gesture, by signs, facial expression, or by other movements, emphasizing the responsive rather than the receptive phases of self-

[1] See Rowe, "Physical Nature of the Child," pp. 44 and 45. Revised edition. New York, 1905.

activity. All forms of self-activity and self-expression are not equally endowed with initiative. Where these terms suggest to the teacher sources of initiative which are fruitful, well and good; but where their suggestions are too vague or indefinite, a search in some smaller group will be richer in results.

4. Distinction between instinct and feeling and between instinct and motive. — Instincts, as we have seen in a previous chapter, represent in each instance large classes of activity. It is often difficult to say positively whether a given case should be called a phase of play, or of the imitative, the emulative, or other instinct. To carry the analysis still further, it is very difficult even, except in theory, to distinguish between certain feelings and instincts. Are sympathy, love of approbation, pride, and shame less feelings than most others of a long list? Here, again, overlapping in classification is noticed, and yet it will be found practical to distinguish the use of memories of emotional states and their connections in getting initiative both from the more definitely and externally reacting instincts on the one hand, and from the more crystallized phases represented by what we call motives on the other hand.

5. Threefold basis of the development of initiative. — There are then aside from the general principle of self-activity, which limits the teacher's action to aiding in development and indicates the impossibility of molding, three main forms of fundamental functioning upon which development of initiative in any given instance is to be based. There must be appeals (*a*) to the instinctive activities, (*b*) to the emotions,[1] and (*c*) to the specialized motives.

[1] In order to free myself from a possible misinterpretation, it should be explained that appealing "to the emotions" here means arousing in the child pleasant and unpleasant memories, and in general suggesting the agreeableness or disagreeableness of proposed lines of action. There is no implication of any special well

The word "appeal," as here used, means simply to set the organism acting, to rouse it now to *instinctive* activity, now to activity in which emotion is prominent, and now to activity in which thinking, whether calm judgment or careful reasoning, dominates the feeling factor in consciousness. Appeals are directed to the child, and it is only by an extension of meaning we may speak of appealing to the instincts, emotions, or other motives. Emotions are powerful in that pleasant experiences tend to be repeated as a result of the agreeable associations linked with both the reactions and the situations or stimuli provoking them, while on account of their disagreeable associations unpleasant experiences fail to be repeated.

6. What is meant by appeals to reason. — Appeals to the child's reason are often urged, and seem to indicate an additional mode of appeal. This, however, is not strictly what is meant, and the expression would be more accurate if it were changed to appeals *through* reason to the child's instincts, emotions (including his interests and various appreciations), or to his motives. If an ignorant mother gives a child a slap when he is playing with fire, it is said she is appealing to fear, and that she ought to appeal to "reason."

of human energy from which action may be drawn. The feeling or emotional tone of an experience attracts attention to the details of the experience. These are therefore longer or more vividly remembered, and when recalled or called into play by association and suggestion, the appropriate motor responses follow more readily. It is easier to classify these experiences according to the feeling-tone involved than it is by the sort of action, since the same sort of action, so far as can be discovered externally, may be accompanied by radically different feeling-tone. The term "emotion" has served in the past a generally beneficent purpose as a basis for classifying the kinds of experience tending to certain forms of behavior and considered from the standpoint of their agreeableness or disagreeableness. This usage does not seem to the author at all inconsistent with a modern psychology which recognizes "resulting satisfactions."

By this is meant that she ought to explain to the child the reasonableness of refraining from playing with fire. On what does that reasonableness depend? Obviously on the fact that playing with fire is dangerous, and might cost him his life, or at least great pain. It really appeals, then, to some phase of the instinct of self-preservation, call it fear, avoidance of pain, or what you will.

The so-called appeal to reason will be found in all cases as in this to be really an appeal *through* reason to some phase of instinct, emotion, or involved motive. This, indeed, has always been the real meaning of the expression; but in the past it has been a blind appeal, as shown by the emptiness of the phrase. It should be an appeal in a logical way to some definite spring of initiative.

7. **The use of instinct.** — Before a teacher can expect to make any wise appeal to the instincts, he must know what they are. A list of *twenty-five* has been given in the fifth chapter.[1] The more concretely and in detail a list like this is held in mind, especially if it is the result of his own thought, the more resource the teacher will have. The old-time teacher knew but one instinct to appeal to, and that is the last on the list, fear. A teacher should regard this list of instincts as a whole keyboard on which he is to work out harmonious reactions on the part of the child. It is evident, however, that the teacher must know the keyboard. He may strike one note at a time, or more. The result will depend on his skill as a player. If it is realized that fear more often deadens reaction than provokes it, and that the difficult task is the positive getting of active habits, an

[1] For the convenience of the reader, the list is repeated here: "imitation, play, construction, curiosity or investigation, collecting, ownership, love, sympathy, sociability, expression, manipulation, ambition, emulation, rivalry, pride, independence, defiance, courage, æsthetical and ethical appreciation, tendencies to avoid inactivity and pain, whether mental or physical, pugnacity and fear."

effort is much more likely to be made to spur the child's ambition or his desire to please his parents, to arouse his curiosity, his imitative or æsthetic impulses, and the like.

8. Instinct as a factor in getting erect writing posture. — Take, for example, the habit of sitting erect while writing or figuring. The old style of training the pupil to sit erect was to hit the pupil, who bent over, a whack with a ruler or a pointer, a distinct appeal to the fear instinct. Even that failed to work, because the fear only acted as an incentive when the teacher was within hitting distance. When this sort of appeal to fear was abolished, many teachers invented other less vigorous and less direct appeals to the same instinct, and with less effectiveness. Teachers who through inspiration or direction have discovered the instincts of the children know that they may use dozens of devices, as occasion demands. They may have the children imitate good postures. The children can play that their backs are straight sticks. Their curiosity may be enlisted on how quickly they can fix things so that they are remembered without help. The teacher may appeal to their instinct of ownership by giving them some pretty reward, or enlist their love of their parents by showing how proud their parents would be, if they knew how straight the children ordinarily sat as they wrote. Ambition may be aroused by calling attention to the straight back of some great man or military hero, whose picture illustrates this characteristic. Emulation and rivalry may be used by having one child compete with another or one row of children with another. The teacher may call up pride, independence, even courage and æsthetic appreciation, by appropriate suggestions, while the one old-time expedient, fear of physical pain, may be abandoned. Instead, even pugnacity in the form of resistance to a dangerous tendency may serve, or fear of a rational sort by showing how people afflicted with spinal

curvature are suspended by the head and waist in no pleasant posture to bring the spine into its natural position.

9. **Instincts provide a wide range of appeal.** — The habit in carpentering of making a certain kind of joint with facility may be secured through its application in the construction of a special table for the school, while skill in a certain stitch, or perhaps in making a flag for decorative purposes, calls for an appeal to the tendencies to artistic expression, *i.e.* to æsthetic appreciation and the expressive instinct. As a joint product, making of the flag appeals also to the social instinct as a plan calling for definite cooperation; and to the constructive and manipulative instincts as something actually to be made. Progress in endeavor of this sort may even be furthered by the response to an ethical feeling of obligation to make some return to the school for the various advantages afforded the pupil there. These examples will perhaps suffice in conjunction with the list of instincts to show the wide gamut of appeal possible, and that often very many of these instincts may be applied, though in many cases only a few forms of appeal are needed. There are children, however, who tax all the ingenuity of the teacher; and the greater variety of definite instinctive and habitual tendencies he knows, the greater his chances of meeting the difficulty.

10. **Different appeals to the same instinct vary in moving power.** — Nor must it be forgotten that each of these instincts as named stands for a large number of different actual reactions; that because one appeal does not stir a child's ambition, it must not be thought that no appeal will. A boy, not attracted by an attempt to rouse his ambition by a citing of the perseverance of a missionary or of a teacher, may warm up perceptibly when instances are drawn from the life of an engineer, a sea captain, or a great financier.

The intensity of an experience[1] is a factor in arousing instincts as well as emotion. That is, if the habit is striking or spectacular, there is readiness to strain and endure in that direction. Fundamentally, the intensity of an experience refers to the degree of feeling aroused, which must in turn be pleasant or unpleasant. An experience may be pleasant or unpleasant intrinsically or be made so by the associations in which it is set. All teachers recognize the value of interrupting themselves occasionally by saying, "now this is important," or "don't forget that," and so forth. This seems to appeal to an importance-assigning instinct, and the result is more initiative, because the importance of the habit to be formed is recognized.

11. **Emotional incentives.** — Another phase of giving a habit intensity consists in connecting it with the emotions. The hard labor on a bit of manual practice, a bookshelf or a tabouret, may be done with eagerness, if done for the boy's mother, or if he knows it will be purchased at a fair price, as it would if made by a *bona fide* cabinetmaker.

This brings us to our second point. Appeals may be made to the boy on the side of his emotional nature, and through the motor tendencies of the associations thus called into play, as out of instinct, will arise both energy and resource. The emotions[2] seem to represent peculiar mental states in which the mind trembles in action or for action, but may have at least at the moment no settled form of reaction decided upon,— unlike instinct, where a natural form of reaction is provided. This difference is clearer in the case of the child, inasmuch as he has had less time in which to develop habitual pathways of reaction, which in the case of instinct are native. If the habit we wish to form can be affiliated then with such a state of mind, it is altogether likely that the definite path of reaction of the habit will serve as the

[1] Compare Andrews on habit, *American Journal of Psychology*, Vol. XIV., p. 143.

[2] See footnote, p. 123.

outlet for any vigorous feeling-energy which will in itself therefore furnish the needed initiative. It is practically never indifferent, if noticeable at all. Its very function seems to be, if pleasurable, to provoke a continuance of the reaction so resulting; and, if unpleasant, to warn against the reaction, feeling having therefore the double function of a lighthouse indicating safe courses on the one hand and on the other protecting from harmful courses.

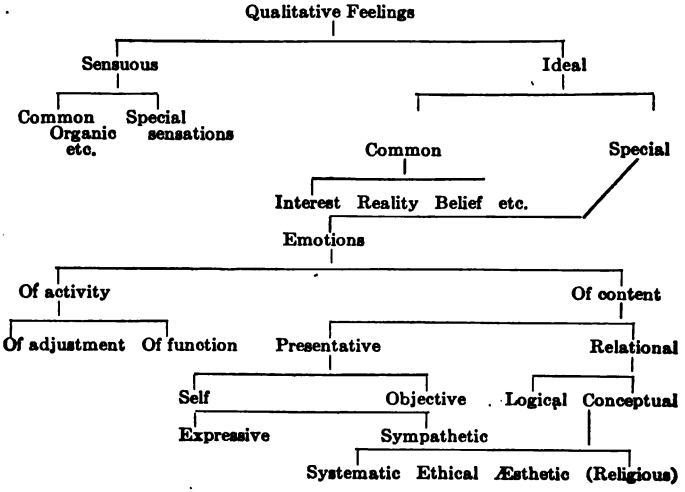
If a boy comes to school promptly every day because he realizes that through his neglect his room failed to be the "banner room" the week before, it is a sort of altruistic emotion that the teacher has attached to the commonplace of coming to school on time. It gives him eagerness, perhaps enthusiasm. He finds means of getting to school, bestirs both himself and his parents betimes that there may be no danger of tardiness.

12. **The value of a classification of feeling.** — Besides the social or altruistic emotion which prompts man to do things for others, there is in the usual classification of the psychologist the intellectual emotion, the æsthetic, the ethical (or moral) emotion and the egoistic. In each case the pleasant forms of these emotions may be appealed to in getting initiative, while the unpleasant are of assistance in checking contrary or obstructing impulses. Here again as in the case of instinct, it is better to keep in mind a concrete list of the most useful forms of feeling. A classification under a very few heads without subdivisions of the classes is not so suggestive as a more elaborate scheme. The modern psychologist tends to ignore the old-fashioned classification, because of the practical impossibility of making distinctions which will be generally accepted. The very large number of words in our language expressing feeling indicates its importance, and, consequently, the most important have been indicated below in the various groups of

the traditional classification. If the reader prefers to classify any of these otherwise, its usefulness as a means of appeal to the child cannot be in any wise lessened by the change in classification. If, however, the classification suggests to the teacher possibilities that would otherwise tend to escape his mind, it will be worthy of his attention not as a finality, but as a scheme to be perfected and adapted to his own experience and terminology.

13. **A classification of feeling.** — There is a considerable difference in the impelling power of emotional forces in the same individual at various times or in different individuals at the same time. Consequently an attempt has been made in the following lists to select those in the traditional classes which seem more generally adapted to use as bases of initiative.[1]

[1] One of the most complete and satisfactory classifications of feeling is that made by Professor Baldwin in his "Handbook of Psychology; Feeling and Will," p. 243 (Holt, 1891), which follows:



The egoistic emotions include: hope, fear, eagerness, reluctance, joy, sorrow, courage, cowardice, cheerfulness, gloominess, desire, loathing, content, discontent, humility, pride, ambition, indecision, triumph, defeat, confusion, adjustment, expansion, ease, superiority, inferiority, security, self-denial, self-confidence, strength, and weakness.

The social include: love, hate, sympathy, dislike, generosity, envy, gratitude, ingratitude, good humor, anger, honor, shame, reverence, scorn, justice, injustice, admiration, contempt, self-surrender, abhorrence, and patriotism.

The intellectual emotions include: curiosity, wonder, surprise, knowledge, interest, familiarity, unfamiliarity, feeling of reality or unreality, belief, contradiction, consistency, inconsistency, congruity, incongruity, adaptation, agency, suitableness, mystery, inscrutability, incompleteness, grandeur, pettiness, importance, insignificance, and inconclusiveness.

The æsthetic emotions include: beauty, ugliness, sublimity, ridiculousness, humor, pathos, comicalness, grotesqueness, and picturesqueness.

The moral and ethical feelings include: conscience (oughtness and ought-not-ness), obligation, self-approval and disapproval or remorse, merit, demerit, responsibility, fitness, feelings of right and wrong, blame, and restitution.

It must not for a moment be assumed that the school child has all these kinds of feeling developed. The development is never even, but always highly specialized

This classification includes a large range of feeling which can be of little actual service as a source of initiative, and in so far tends to distract attention from those feelings which really contribute.

with marked development at one point, and with no manifest feeling at all in an apparently related particular. Hence feeling must be studied and the classification must be used not as a basis of adjustment, but as a basis for study and experiment. When the study is completed, an actual basis of adjustment will exist.

14. **Feeling and interest.** — Whenever an experience has enough of emotional quality to make it attractive and yet not to arouse very strong feeling, it is said to be interesting. Strong feeling is usually expressed by the verb, "to feel," or a synonym, and some vigorous word. "I felt exasperated," "I enjoyed it immensely," "I suffered dreadfully," are samples. For such occasions the verb "interest" is too weak. The strongest adverb it will support gracefully is "intensely." An experience may interest one "intensely," or (as interest gives the emphasis of the subject of the active verb to that which arouses interest, while feeling emphasizes the person feeling), one may say, "this interested me," or "I found it very interesting." When Herbart considered the secondary aim of education the development of a many-sided interest, he did not expect that a person would have strong feeling in connection with a wide range of experience. As soon as an interest becomes strong, some other term is used: a man is "absorbed" in his business, "carried away" by the beauty of music, and so forth. On the other hand, when not much interest is expected, but a little is hoped for, we talk no longer of getting interest, but of some sort of appreciation. This is then a term popularly used for a phase of feeling lower in the scale than interest. It is, therefore, likely to be too weak to serve as a source of initiative.

It seems almost a pity to pull down to the level of ordinary feeling such a word to conjure by as *interest*

has been made; and in placing it scientifically the writer is not overlooking the decided suggestiveness and practicality of looking at interest from the standpoint of what proves interesting. This detail has been neglected by the psychologist because he wanted to find out what feeling was like in its fundamental nature, and into what subdivisions he could divide it. Not succeeding very well in either particular, his contribution has been small. On the other hand, the pedagogue has gained a somewhat new point of view, and has laid a tentative basis for valuable knowledge in the connection of interest with attention and with the guidance of the child. For, in the first place, interest has been studied from the standpoint of what proves interesting at one time or another; and, secondly, the various changes and modifications in interest have been noted both in their tendency to narrow down and in their capacity for broadening out, and for giving to similar external experience a widely different significance.

15. **The verbal distinction.** — The fact that the term "interest" is used of the commoner phases of feeling has developed for it a double usage not found in the case of feeling, and impossible to express without resort to phrases. "Interest in Wagner was intense," may mean that interest other people had in his music was intense, or it may mean that Wagner's own interest in his art was intense. If the sentence read, "feeling in Wagner was intense," it could have only one meaning. So with the adjective and adverb. "He was interesting and worked interestingly" refers to the interest he excited, while "he was interested and worked interestedly" refers to the interest he himself has. The words "feeling" and "emotion" always refer to the activity of the subject who feels, and hence one may say he worked feelingly in the

sense that he had the feeling himself. There is no convenient way of saying he worked in such a way as to arouse feeling in others. It is this double reference of interest and the emphasis on the thing felt which has led to so much misconception and aroused so much discussion. It has made possible such expressions as *permanent interest.* The ridiculousness of such an expression as *permanent feeling* is apparent. Permanent interest is a useful and pedagogically desirable expression meaning that a certain subject or activity is sure to arouse feeling in certain persons if their attention centers in that direction. It is strange that the numerous writers on interest [1] have not elaborated these verbal distinctions. Once cleared up, interest would lose its mystery and gain in real and practical value.

16. The objective reference of interest. — Interest should be defined, therefore, as that phase of feeling in which consciousness is directed predominantly to the objective phases of the experience arousing the feeling rather than to the more subjective feeling itself.[2] Con-

[1] Even Pillsbury in his elaborate treatise on Attention (Macmillan, 1908) wonders at the "curious development of popular consciousness" by which interest "has become referred to the object instead of the mind itself." (See p. 56.) He fails to find the function of interest.

[2] Compare Ostermann, "Interest is the consciousness of value," "Interest." Kellogg, 1899. Also Baldwin, who defines interest as "the impulse to attend" in a good discussion. "Handbook of Psychology; Feeling and Will," pp. 138 to 148. New York, 1891. Also De Garmo, "Interest is a feeling of the worth, to the self, of an end to be attained." Page 28, "Interest and Education." Macmillan, 1902. Also Tanner in an excellent chapter on interests, "Interest is the impulse to self-preservation, directed towards a definite object or idea. It is the impulse of man to realize himself in some particular form. . . . It is the focusing of the state of consciousness preliminary to action. It is atten-

sciousness of the attractiveness of the experience is not lost thereby. It plays its part in the mental process suggesting it, and with the resultant tendency both to prolong and repeat the experience.

Pleasurable emotions may be regarded as racial interests common *in potentia* to all, while in themselves interests are more personal and result from previous special functioning of the emotions. In this sense we are using interest as a certain native or acquired capacity to get pleasure from a certain kind of situation, and to react accordingly. Any state of mind that is tinged with pleasurable emotions, unless they are too intense, is tinged with interest, and even those states of mind characterized by unpleasant feeling are interesting in so far as man tends to seek satisfaction in ridding himself of annoyance.

The objective reference of interest is in no way better illustrated than when we speak of a man's business interests, club interests, his church interests, or his interest in politics. In this case reference is made to the particular sort of idea to which he will resort with interest upon occasions. These are examples of the permanent interests defined above.

In some of its phases, particularly where interest borders on curiosity, the tendency to react by focusing on the stimulus is accompanied by so little feeling as almost to dissociate interest from feeling altogether. In such phases interest approaches the level of instinct. From this it may grade up to a point where, if the reaction is impeded, the feeling element may be very strong and pleasant or unpleasant. Here there is no question of its truly emotional nature.

tion, but attention with special reference to the feeling which prompts it and to the action which follows." Pages 231 and 232, in "The Child." Rand, McNally, 1903.

17. The three levels of interest and their twofold reference. — There are three levels of interest. The first one has its origin on the plane of *the new*, the unexpected, the changing. A second level marks an interest in things *as definitely related* by cause and effect, or by likeness and difference, genus and species, growth, function, quality, quantity, location, time, space, identity, equality, ownership, and so forth. A third level of interest, apparently compounded from the other two, is an interest in matters of belief, *relations which are hidden* and not understood, definitely suggested by the imagination, suspected or felt, but apparently incapable of proof. When these are applied to the two fairly distinct fields, natural science and the humanities, the following result is secured, which will serve to indicate not only the possible scope of the development of interest from the standpoint of the object of emotions, but also to guide or form a basis for determining and classifying the interests the child is found to have developed.

1. Interest on the level of instinct.[1]

[1] Professor Thorndike classifies interests as instinctive and acquired, classing under the instinctive the interest in —

(1) Moving objects rather than still objects.

(2) Other human beings and living animals rather than plants or inanimate objects.

(3) Clear rather than obscure or indefinite objects.

(4) Intense rather than weak stimuli.

(5) Novel rather than familiar objects (unless the latter have special advantages).

(6) Pleasurable rather than painful stimuli.

(7) Expected rather than unexpected stimuli.

He calls attention to the diversity in acquired interests due to differences in instinct, capacity, and in experience, referring to the "specialization of interest in a special circle of friends, special divisions of knowledge, special profession or trade, a special locality, and so with the many objects of modern civilized life." "Elements of Psychology." Seiler, New York, 1905.

(*a*) *In man.*

In human beings individually. The child's intent scrutiny and study of every newcomer — the butcher, the baker, the grocery boy, the new playmate, and the afternoon caller — contribute evidence enough of its existence.

(*b*) *In nature.*

In objects individually. Witness the child's delight in examining new plants, or animals or rocks big enough or startling enough to engage his attention.

2. Interest on the level of definite relations (science).

(*a*) *In man.*

Far less commonly developed than the above, and contrasted with it by the search for cause and effect, likeness or difference, or other basis of classification, is the interest in the definite relations existing between men either considered separately or in groups. Various plays, like house, store, soldier, fireman, school, pieman, though imitative and often verging on the burlesque, still indicate the interest of the child in relations between persons. The child's interest in parades, in watching men work, is also evidence of his first crude attempts to put these units of personality into relationship. His questions as to *why* persons do this or that, and *how*, are indications of a similar working of his interest in the definite relations of human beings.

(*b*) *In natural sciences.*

Again, as in man the child seeks to find definite relations of cause and effect, classification, growth, function, likeness, difference, quality, and so forth, so he delights to find them in objects and the phenomena of natural science, unless these relations are too evident. Childish discoveries, explanations of things, questions such as, "What is it for?" all testify to this form of interest. It is an interest greatly dependent for its breadth on the

sort of encouragement it has been vouchsafed in the child's previous development. It is at the basis of all science, and has been called the scientific, speculative or philosophical interest.

3. Interest on the level of hidden relations. (Art and belief.)

(*a*) *Among men.*

Interest in tactful adaptations, in ceremonies, in right and wrong action both æsthetically and morally, in superstitions, and — by an extension — interest in the ultimates of philosophy, and in religion,[1] is a field the culti-

[1] Of course the interest in human relations as far as man is concerned may be easily extended from relations between mind and mind to relations between mind and *Mind.*

This sixfold division is an adaptation of the one presented by Herbart a hundred years ago. No other since has been so illuminating as his, though the subject was so hastily treated and couched in such philosophical language as to fall short of the practical application which should result from such a classification. The few attempts to translate his views have failed to clear up, and have at points served to dim even further, the already hazy exposition of the original.

The studies of Preyer, Baldwin, and others have led me to give the precedence in position to man rather than natural phenomena. The personifying tendency seems evidence of the more fundamental character of interest in personality.

See the Lange-De Garmo translation of Herbart's "Outlines of Educational Theory." New York, 1901. See also Felkin, "Herbart's Science of Education." Boston, 1893.

The importance of these forms of interest as indicating the scope of the child's possibilities may be illustrated by comparing them with the five great inheritances or ends of education as indicated by President Butler in his "Meaning of Education."

"If education cannot be identified with mere instruction, what is it? What does the term mean? I answer it must mean a gradual adjustment to the spiritual possessions of the race. Those possessions may be variously classified, but they certainly are at least fivefold. The child is entitled to his *scientific* in-

vation of which, though never completed by child or adult, is early begun. The questions of the child as to who made God, and the reasons for various natural phenomena suggested by life, and death, the meaning of music, the nature of ghosts and other products of superstition, are representative of this field of interest.

(*b*) *In nature.*

The child early manifests an interest in the fundamental nature and function of things, the metaphysical ultimates. He recognizes certain harmonies and incongruities of color and form, of sound, of taste, of smell, and even of sensations of touch as pleasant or unpleasant. Salt goes well with oysters or beefsteak, but sugar makes an inharmonious combination. The relation, the underlying reason why, is hidden. Many relations are believed vaguely to exist long before they reach the level of proven knowledge. All forms of reasoning by analogy, and all forms of belief as applied to objects in nature, are accompanied by this sort of interest. The attempt of the child and the philosopher to identify personality and reality, is a phase of this interest, the one finding the person in the real, and the other the real in the person.

18. The usefulness of the classification of interest. —

heritance, to his *literary* inheritance, to his *æsthetic* inheritance, to his *institutional* inheritance, and to his *religious* inheritance. Without them he cannot become a truly educated or cultivated man." Butler, "Meaning of Education," p. 17. New York, 1898.

Whereas President Butler expressed in terms of environment what has in this book been put in terms of interest (subjective tendency), Professor Dewey emphasizes native capacities inherited as a result of generations of adjustments to such an environment, singling out the four fundamental instincts — the communicative (literary), the investigative (scientific), the constructive (institutional), and the expressive (æsthetic and religious).

See his "School and Society," pp. 47–61. Chicago, 1899.

Just as a clear and comprehensive classification of the emotions will serve to hold together a list of more specific forms, so the classification above will serve to widen out the list of interests that may be made available. However, it is useful only as it suggests some concrete interests. Nor should these kinds of interest be regarded as working separately. They generally work in combination, and their consideration separately is only justified by the concrete suggestions thus derived. A teacher is dependent on his recollection of his own childish interests, or those he gets second-hand from others, or on observations made in course of his experience, for the concrete list of interests or cases of interest he may associate with any of these six forms. These possibilities should be cultivated; for, the more concrete interests they disclose, the greater the teacher's chance of securing an active development of the child.

19. **"Direct and indirect" interests.** — As has been seen, any of the six forms of interest may be latent and undeveloped. Some forms of it are vigorous, others are weak. Those that are vigorous are called direct interests. A boy may have a direct interest in building a boat, but may dislike using a plane, and so have only a borrowed or indirect interest so far as the plane is concerned. This may later, when he has become an expert with that tool, become itself a direct interest; but so long as he is interested in that tool simply because he must do with it a certain kind of work, he has merely an indirect or borrowed interest in it. The gradual widening out of interest is accomplished by the gradual transformation of indirect interests into direct.

In habit-forming the knowledge of the child's particular interests is of even more practical importance than in idea-getting, because it not only secures the desired

initiative, but it also promotes repetition, and may even protect against exceptions, since the child is not likely to react in a way that runs counter to his recognized interests.

In appeals to the child's interest, above all use an *effective* interest. If that leaves a choice, use one on as high a plane as possible and one that is self-sustaining.

20. "Resulting satisfaction" as a source of initiative. — Another phase of emotion which is of fully as much importance as interest, to which it is akin and fundamental, is what Thorndike calls "the resulting satisfaction."

One may not know of or think of any instinct, emotion, or interest which would serve as a source of initiative. In such a case experimentation is in order with a view to discovering whether the action to be made habitual is itself pleasant, or is allied to any form of action which is performed with resulting satisfaction. Mark Twain's Tom Sawyer wished to do his work in clearing the lot of loose stones with as little effort as possible on his part. His device of making it a play for the other boys was a successful experiment, carrying with it sufficient resulting satisfaction to accomplish the task. Not infrequently the teacher is called upon to do such "sugar-coating"; and, where long and tedious drill is required, it is highly legitimate.

This experimentation is not only desirable where the teacher knows of no instinct, emotion, or interest or other motive which seems to bear on the habit, but it is of almost equal importance in determining the efficiency of any of those motives. That is, it should be used as a test of the actual applicability of the source of initiative to the case at hand. There may be unpleasant experiences, injuries, losses, or other painful memories so connected with the proposed line of action that what would

ordinarily supply incentive will fail in this application. It would be all the more necessary to urge the especial value of this experimentation for initiative, were it not that the natural tendency, after finding apparent sources of initiative, is to put them to the test. The aim of this test, however, as of the experimentation previously alluded to, is to discover whether or no and to what degree satisfaction follows or attends the action.

21. **The statement and illustration of the law of resulting satisfaction.** — This law of habit formation is expressed by Thorndike as follows: "Any act which in a given situation produces satisfaction becomes associated with that situation, so that when the situation recurs, the act is more likely than before to recur. Conversely, any act which in a given situation produces discomfort becomes dissociated from that situation, so that when the situation recurs, the act is less likely than before to recur." [1] Thus emphasis is given to the fact that whenever the reaction to a given situation is accompanied by a resulting satisfaction, other things being equal, the same reaction is more or less likely to follow the given situation according as the resulting satisfaction gained by the response is greater or less. Nor must it be forgotten that associated dissatisfaction is an equally powerful deterrent, though negative means should be used only in subordination to initiative along positive lines.

If a child finds that his finger nails, which have been neglected and then broken, may be trimmed up and made comfortable by biting them, he will tend, because of that satisfaction, to remember in future instances the relief gained before, and after two or three repetitions he is well on his way to the formation of a habit; whereas

[1] See Thorndike, "Elements of Psychology," p. 203. Seiler, New York, 1905.

it would have been escaped if the occasion had been removed by proper care of the nails originally, and if instead of satisfaction there had been associated with its practice feelings of disgust at the dirtiness of the habit and a feeling of fear of its dangers.

If one looks over the list of his friends and acquaintances for those who seem to be particularly popular and generally liked, in nine cases out of ten, it will be found that the person selected is a liberal distributer of praise. That is, he (or she) has a sort of habit of quietly or even openly approving the worthy words and deeds of those with whom he comes in contact. Consequently all those persons get resulting satisfaction while in his company, because their reactions have all their merits emphasized. As Tolstoi has aptly phrased it, "Flattery in all the best relations, however friendly and simple, flattery or praise is indispensable, just as grease is indispensable for making wheels move easily."[1]

22. The application of the principle of resultant satisfaction. — This same sort of approval is just as much of a power, and indeed far more so, in the life of the child than in that of the adult. The tasks that the children have spent hours upon with patient effort should not be passed over lightly in silence or taken for granted. On the contrary, such exercises should carry with them all the resulting satisfaction it is possible to associate with them.

If the work is in itself meritorious as a result of the effort, the satisfaction should grow out of both the results and the effort. If the latter alone is really commendable, care should be taken not to neglect the only possibility that is left of securing resulting satisfaction

[1] Tolstoi, "War and Peace," trans. by Dole, Vol. I., p. 32. Crowell, 1889.

for honest effort. If lack of endeavor has produced inferior fruit, resulting dissatisfaction should be connected with the neglect.

In application to habit-getting, it is evident that satisfaction or dissatisfaction can only be used after the habit has been tried. To be sure, the teacher can have the child try to picture the pleasant results of facility, but the anticipation will be very weak compared with the pleasure of seeing progress and feeling not only the pleasure of achievement, but the pleasure derived from the desirable reaction itself, which is also combined in the resultant satisfaction.

One practical way of using this resulting satisfaction is to make use of the child's instinctive pride in progress. Too often there is no attempt to show him the improvement made. His writing is better. That can be shown. He can work faster and more accurately in arithmetic. Let him see his progress. His attention, his order, his ability to study, have all improved. He will get far more satisfaction and inspiration from a teacher's frank and ready acknowledgment of that fact than from many a warning and threat. Professor Swift [1] showed that the influence of watching their own advance from day to day was very helpful to his subjects.

Three uses of resultant satisfaction seem to be most practical: —

23. (*a*) **Experimentation for initiative.** — 1. Where other motives fail or are counteracted by unpleasant associations, experiment until some basis carrying with it a definite satisfaction has been secured. The following will serve to illustrate: Suppose a boy is possessed of the absurd notion, which many boys have, that music

[1] Swift, "Psychology and Physiology of Learning," *American Journal of Psychology*, Vol. XIV., p. 223.

is a study for girls; and suppose that he is behind his class in the work, but has mistakenly assigned the cause to the music instead of to himself. His teacher wishes him to get the habit of recognizing and singing certain intervals when they are presented to him in his book or on the blackboard. He does not want to practice, and his æsthetic emotion is too weak to counteract his other feelings. What is to be done? Obviously resultant satisfaction, supposing all other motives to be unavailing, is the only source. How is he to be aroused? The wise teacher sings, or perhaps causes to be sung, to him a wide range of songs, — patriotic songs, battle songs, comic or sad ones, songs with all sorts of rhythms, — and asks him which he likes best or which he would like to hear again. If this elicits any enthusiastic preference, as it will if a sufficient range and sufficient tact have been used, the teacher follows up the advantage, but not too fast, by getting him to learn the song preferred. Then, some time later, after the boy has been committed to the pleasure of that song, the teacher may show him the intervals desired, what they add to the song, and how he can find in other songs those same intervals which gave him pleasure. He may try them in other songs, and hence the initiative furnished by the resultant satisfaction derived from one song may prove the basis for getting the habit of recognizing and reproducing certain intervals.

24. (*b*) **Reënforcement of initiative.** — 2. Heighten the useful incentive by such praise or other satisfactions as may be associated with it legitimately.

The habit of correctly interpreting and reproducing light and shade in drawing may be forever barred to the child by thoughtless and sarcastic treatment. On the other hand, if the child has some, even a slight, interest

in certain objects which lend themselves to practice in this sort of skill, that interest may be led to the drawing of those objects with the appropriate lights and shades. If the successes in the shading are applauded, and the reasons for the successes pointed out, while help is given at the points where the drawings failed and the reasons are pointed out for the corrections (always supposing it is tactfully done), the combination of interest with the resultant satisfaction will be sufficient to secure in some measure at least the difficult habit.

25. (*c*) **Testing and weighing initiative.** — 3. Select from and test the instincts, emotions, or other motives suggesting themselves by studying the degree of satisfaction resulting from the reaction. One may rely upon the collecting and ownership instincts for a habit of finding out the names for various common sorts of plants and minerals. But, if the knowledge is not forthcoming, — if the child gets merely the names and nothing else, — it is altogether conceivable that these instincts may not be equal to shouldering the task placed upon them. If interesting facts be coupled with the instinctive activity, the resulting satisfaction will make them more effective.

26. **Motives as sources of initiative.** — We have found grounds for distinguishing between appeals to instinct and emotions with special reference to interest and the satisfaction resulting from certain actions, even though these sources of initiative could not in all cases be differentiated. On similar grounds the motives of the child are worthy of separate consideration. They offer a somewhat different field of suggestion, furnish definite incentives, and are needed for the rounding out of the possible basis of initiative.

Here again the psychologist contributes little to the pedagogue's practice. Not even such a fundamental

question as whether motives are cognitive or emotional is settled even by those who endeavor to make that distinction, and almost no attempts have been made to compile a list of motives found to appeal to children at various ages. As used specifically here, the term "motive" refers to any *definitely recognized ideational, emotional, or volitional tendency* which upon occasion will initiate activity.

27. **Motives as validated impulses.** — In so far as motives may represent a large genus of impulses, it includes as species those instincts,[1] emotions, and interests which are *known* really to have moving power. While instincts, emotions, interests, and, to some degree, ideas are like railroad ticket forms, all printed and ready for the agent to stamp, the motive is like the ticket which has been stamped, *i.e.* validated, and is good until used, unless recalled. That is, instinct, emotion, and even our interests, ideas, and ideals may impel us to do many foolish things, but until we have stamped them as *being good enough for us* they do not pass into action except by a sort of accident in times of great excitement or recklessness. A person may be hastening to catch a train and feel a certain impulse to run, but may not do so, as apparently he has plenty of time. He turns a corner and sees by the clock on the railroad station that his watch had stopped a few minutes before, and that it is nearly time for his train to start. He now has the impulse as before, and with it a real motive for running.

[1] Although instinctive action is itself the logical outcome of structure, it is ordinarily regarded as though it implied not only the possibility of interference, but a conscious consent, as indeed it usually does in all important action. It is only in this sense that it is included in our definition as a definitely recognized volitional tendency. In this sense, too, instinct becomes a motive according to legal as well as popular usage.

It has been validated by connection with the motive, which he might formulate by saying, "I would rather run a little than lose my train." That is, a standard and an action have been related. Many people lack that motive and would prefer to wait for the next train.

Aside from the instinctive and emotional species of motive, and perhaps built up out of raw material of similar sort, there are motives of a distinctly cognitive or reflective origin. Below the plane of a child's or an adult's ideal at different stages are the planes of his principles, his definite purposes, his standards, his rules of conduct, what he really intends to live up to, the whole mass of intentions that have grown out of previous experiences with life's many concrete situations. Let these precedents be once established and the action or inhibition, *i.e.* the checking of action, will follow without wide variation. This sort of reënforcing of selected tendencies is more than a play of interest. All of these impulses are active and tend to their realization, while the motive, given the initial stimulus and its reaction tendency,[1] simply indorses them as up to or above the standard. Then the reaction takes place. It is like a precedent in law, an application to a specific case of the truth or principle inherent in a law or statute. It tends to action both because it removes objections or obstructions, and because its own energy is fused with that of the impulse indorsed.

An accountant may have no desire to work overtime; but, when some one comes to him with a special difficulty, stating that he will pay well any expert who will help

[1] Of course the motive includes more than the indorsement, even if we do not presuppose the impulse to be validated. In independent form it is still impulsive in character, but lacking in definite motor tendencies.

him out of the tangle, the accountant may consent. He thinks, — "It will pay me," *i.e.* "A motive has been given me; this corresponds to the kind of thing I allow myself to do."

He may then do the work partly from instinctive motives like pride, curiosity, ambition, or kindliness, or because of emotional motives, such as the pleasure he anticipates in solving the difficulty, helping a friend, or repaying a favor; or he may do it with direct interest in his work as a motive, eagerness to get as well acquainted as possible with all its phases; finally, he may do it because he "needs the money," though in this last case the real motives are hidden, being really those which determine what he does with his money. The money-getting has perhaps only a secondary or borrowed, an "indirect," interest.

It is evidently impossible in given instances to separate these various instincts, emotions, interests, and motives, since motives include all the other really active forms of tendency, linking with them a peculiar indorsing tendency.

28. President Eliot's emphasis of the permanent motive. — Permanent motives should be preferred to temporary motives, and those most to be desired to those less desirable. President Eliot, in his "Essay on the Unity of Educational Reform," uses the term in its widest sense, presenting at the same time a careful list of motives important in discipline, urging the preference of the permanent and more fundamental motives over the temporary. He points out the fact that at eighteen there are no methods of discipline analogous to such temporary measures as "whipping, or the deprivation of butter, sweetmeats, supper, or recreation, and the imposition of Latin or English to copy." A little below he says: —

"By preference, permanent motives should be relied on from beginning to end of education, and this for the reason that the formation of habits is a great part of education, and in this formation of habits is inextricably involved the play of those recurrent emotions, sentiments, and passions which lead to habitual volitions. Among the permanent motives which act all through life are prudence, caution, emulation, love of approbation, and particularly the approbation of persons respected or beloved, — shame, pride, self-respect, pleasure, discovery, activity, or achievements, delight in beauty, strength, grace and grandeur, and the love of power, and of possessions giving power. Any of these motives may be overdeveloped, but in moderation they are all good, and they are available from infancy to old age.

From the primary school through the university, the same motives should always be in play for the determination of the will and the regulation of conduct. Naturally they will grow stronger and stronger as the whole nature of the child expands and his habits become more and more firmly fixed; and for this reason these same enduring motives should be continuously relied upon." [1]

29. The development of motives. — Motives may already exist in instinctive tendency or, on the other hand, they may themselves be developed, existing only in a germinal capacity. A child may have little interest in architecture, but the manifestation of an architectural interest by those about him will sooner or later lead to the development of certain habits of criticism and taste which may develop sufficient power eventually to materially improve the external appearance of the town in which he lives.

[1] See Charles W. Eliot, "Educational Reform," p. 329. Century Co., New York, 1898.

In fact, precisely as interest may be derived or borrowed by association with ends or interests which are direct or immediate, so may motives be associated with much more vigorous forces and borrow more or less of impetus from them.

It is often desirable when starting a new subject to aid the child in building up motives and ideals by leading him to make decisions as to the character of his work. Not all children are interested in manual training, physical culture, drawing, sewing, and the like *per se*, just as many are not interested in history, geography, and arithmetic. If motives can be developed in a specialized form applying to the new subjects, another point of advantage has been gained by the teacher.

30. Appeals through reason. — Having set forth this possibility of developing initiative from a whole scale of instincts, emotions (including the emphasis of the resulting satisfaction), interests, and other more specialized motives, the significance of "appeals to reason" referred to at the beginning of this chapter is apparent. The result of such appeals would be first of all reasoning, but not necessarily the habits desired. Reasoning is always a means to an end, a process of adjustment to a definite situation. An "appeal to reason" is merely an attempt to prove to the child by reasoning that the habit is one that is fundamental to some desirable possession or activity, or has some vital connection with his motives.

Saving up pennies for a bicycle may lead to a habit of economy that thrift as a motive could never start, though saving for a bicycle may not be so desirable in itself as the more abstract thrift motive. Many a boy who is looking forward to being a business man, and a good one, utterly fails to make any connection between his arithmetic or his geography and this ambition, unless a wise teacher has made

a connection between the studies and business. Likewise he fails to see the connection between good planning or systematic order and the work of the business man.

31. **The necessity of connecting initiative with the habit to be formed.** — The point is then that the teacher may have decided upon the habit he wishes the child to form, and the child may have the motives, instincts, etc., as a basis for initiative, but there is great danger of failure, unless the connection between these fundamental tendencies is made, not by telling him that it is important, but by furnishing him data and reasoning it out with him until he is really convinced.

If you wish to develop in a child a habit of aversion for alcohol, don't try to overrule or overawe him with meaningless pictures of stomachs variously affected or of deranged livers, but present to him as vividly as possible pictures of the torments of the unhappy homes, — the suffering of the wife and children, the privations endured, the dangers of life and limb, the disgrace and loss of respect incurred, — true data, unfortunately too easy to accumulate, with which feeling may be aroused of an intensity that charts of diseased stomachs and livers could never produce.

This development of connection between the motives and the desired habit is somewhat akin to the specialization of the motives before referred to;[1] but whereas there the end in view was to show the possibility of finding a useful nucleus of motives relating to a specific form of action, here it is to form the special connection between an individual habit and motives already discovered.

32. **Adolescent initiative.** — The tremendous burst of adolescent enthusiasms which has been brought to general notice by President Hall's study[2] must not be overlooked

[1] See p. 148.

[2] See Chapter XIII. on "Savage public initiations, classical ideals and customs, and church conformation" and Chapter XIV.

by any searcher for initiative. The various sources and channels of spontaneous activity and adolescent ambition indicated by him are suggestive of no end of motives available at this period, and also of many a reservoir which could doubtless be drawn upon to some extent even before the real awakening.

This new-found self, instead of taking the child out of school, might with wise guidance lead him to make heroic sacrifices in preparation for the widest possible range of serviceableness both to his family and the community. The boy should be helped to understand himself, his possibilities, and the bearing of his ideals upon them. Many a boy becomes imbued at the high school age with a new zeal for his school work. He grows more helpful, sympathetic, and manly in his attitude. He devotes himself wholeheartedly to some special subject, art, trade, or arduous task. He dreams great dreams and hopes great hopes, which are sources of inspiration to him, whatever their possibilities of realization.

Perhaps the most marked, and certainly one of the most universal, applications of this adolescent initiative has been made in the development of certain religious habits. Though this age was doubtless originally selected as a result of experience and not purposely, the curious thing is that religious teachers have been the only class to make use of this period of life. The teacher or parent should certainly with purpose and plan avail himself far more widely of these newly awakened emotions and motives.

33. **Judicious plying of initiative.** — In the adaptation to the sources of initiative, care must be taken on the one hand not to overwork the initiative once secured, and so

on "The adolescent psychology of conversion" in Hall's "Adolescence." New York, 1904. Also his briefer edition of the same, entitled "Youth." New York, 1907.

interfere with the action. You may have trouble in getting up your initiative or, to use a current metaphor, "in cranking your engine," but once effectively started, you cannot dodge too quickly. All you have to do is to get out of the way, get others out of the way, and the energy there will do the rest. This is equally true of many forms of initiative. After presenting his children with new skates, a father does not need to spend a half hour telling them how pleased he would be if they would learn to skate.

On the other hand, there are incentives worthy of the name, but they lack power. The habit in question may be a difficult and tedious one to form. You may need four cylinders when you have only two (to lapse again into automobile metaphor). That is, the power must be used much more economically and exhaustively than before. It must be applied for a longer time to get any apparent results. A boy may need several half hours of persuasion before he forms the habit of practicing intelligently for half an hour a day on a new violin furnished him.

Of obvious importance is the principle, — Use any fount of initiative singly or any combinations of all the possible sources that will prove best and most effective. It so often happens that a child is hovering on the very brink of a most determined resolve when just one more well-directed appeal would secure the initiative desired, but the teacher has already made appeals and has trusted to luck for the result. Let him rather trust to the results for his luck, and make sure of the initiative.

The good sermon, the good plea of any sort leading to the formation of habit, evidences the varied and multiple appeal to incentives.

In all this chapter the teacher has been thought of as a prominent feature of the environment quick to seize upon and to make suggestions that would enlist initiative. The

withdrawal of the teacher's support, unless an adequate source of initiative has been found, is to weaken greatly almost any form of initiative.

34. **Positive incentives should be preferred to negative.** — Nor should it be forgotten, particularly in the case of the emotions, that use may be made of those motives which, like disgust, avoidance of pain, and dislike of the ugly, are negative and inhibitory in character. But these are last resorts, and should never take the place of a possible positive impulse. A child may conduct himself in an orderly fashion in the school halls, because there are teachers in each hall and discovery with its attendant trouble is certain. The motive is negative. On the other hand, he may conduct himself with equal propriety because he has been put on his honor, has a desire to promote the general school spirit, or is anxious to prove his qualifications for an official position in a formal school organization, such as the school city or the school state. The positive impulse will develop his character, while the negative stunts his moral growth.

35. **Summary.** — Initiative is the term applied to any combination of impulses resulting in energy and resource. Self-activity and self-expression are broad terms covering countless sources of initiative.

The more concretely and variously these sources are borne in mind, the greater will be the resource of the teacher in enlisting the child's initiative. Instincts, emotions (including interests and satisfactions), and other motives serve as a basis for classifying the sources of initiative, which are best studied in the individual instances in which they manifest themselves. "Appeals to reason" are really appeals *through* reason.

The child's numerous instincts should be regarded as a keyboard to be played upon for new adjustment and for initiative. Instincts provide a wide range of application,

even the same instinct furnishing more or less initiative according as the mode or the time of appeal to it is fortunate, or less so. That which is striking or spectacular, and so excites the attention, is especially effective.

The emotions furnish a basis of initiative much like instinct, but devoid usually of any particular previously determined form of reaction. This makes the habit desired a possibility as an outlet for feeling. A classification which will aid in suggesting what various forms of feeling may be roused is desirable. Whether it be made along traditional lines, the egoistic, social, intellectual, æsthetic, and moral, or upon some other basis, depends on which proves the most practical and most fertile in suggestion.

Interest is emotional in character and differs from feeling only in that it ordinarily is applied to the less violent phases of feeling and with strong reference to the object of the feeling. The variety in the usage of the word "interest" and its derivatives plainly indicates its double reference.

Pedagogically, important gains have been made by the study not only of the feeling, but of that by which it is aroused. Permanent interests illustrate this objective reference.

The interests of children vary so widely among different individuals that it is perhaps best to use as a basis of classification for those interests which the teacher discovers the following adaptation of one made by Herbart: —

1. Interest in individual persons.
2. Interest in individual objects.
3. Interest in the definite grouping, relations, and affiliations of men.
4. Interest in the definite relations of natural phenomena, likeness, difference, cause, effect, and the like.
5. Interest in relations of humanity, which are more or

less vaguely comprehended, matters of fact and belief, relations to right and wrong and to the Infinite.

6. Interest in the relations of objects, which are more or less vaguely comprehended, matters of taste and harmony, and function.

The teacher's own experience and observation, written records and oral records of others' experiences, should be studied for a definite list of such interests.

The interests of the child are in a constant state of change, largely one of growth by the addition of new direct interests developed out of indirect interests. The knowledge of the child's interests and the use of interests which are effective, but on as high a plane as possible, are important items in skillful teaching.

A very important source of initiative is found in any reaction which produces satisfaction or has satisfaction closely associated with it. This is dependent on the general principle that, other things being equal, resultant associated satisfaction is a vigorous incentive to the repetition of an act, while resultant associated dissatisfaction is a strong deterrent. This principle may be advantageously applied in three ways: (*a*) where other motives fail, experiment until an action has been discovered which is characterized by definite satisfaction and may serve as a basis for the habit. (*b*) Heighten the useful incentive by such praise or other satisfactions as may be associated with it legitimately. (*c*) Select from and test the instincts, emotions, interests, or other motives suggesting themselves by studying the degree of satisfaction resulting from the reaction.

Motives are definitely recognized ideational, emotional, or volitional tendencies which upon occasion will initiate action. As a class, motives include not only "validated" instincts, emotions, and interests, but also such ideas,

ideals, principles, definite purposes, standards, and crystallized intentions as have impelling force.

Use may also be made of any of these specialized tendencies, and they should be developed so as both to widen their applicability and to fit an originally simple tendency for its adjustment to more complex situations. Permanent and desirable motives are to be relied upon rather than the temporary and less desirable.

Again, it is often necessary to connect a desired reaction with a motive by definite reasoning. The association will not be made automatically in many cases when it seems to be very evident to the adult mind. Appeals to reason often refer to the need of connecting with some motive the habit to be formed.

The awakening of motives at adolescence must not be overlooked. Their power is evidenced by their general application in forming religious habits.

Good judgment must be used in appealing to sources of initiative, and care must be taken neither to overdo the appeal and interrupt the reaction nor to enlist incentives inadequately. Combinations of incentives must be used, where they are not strong enough separately. Positive are always to be preferred to negative incentives.

CHAPTER IX

Methods of Securing Practice

"Practice makes perfect."
"Usus promptum fecit."
"Little strokes fell great oaks."

1. **Repetition the desideratum of practice.** — Having initiative, the sooner practice is begun, the better. Repetition, but not humdrum repetition, is the desideratum of practice. Still, whenever habits are to be formed, a certain amount of repetition, monotony, and effort are unavoidable, and we never need worry about making our drill work in school so interesting that there is no opportunity for accustoming the child to work when discomfort or even hardship is involved. Method teaching has heretofore dealt almost exclusively with ideas. We have come to think of repetition, like reviews, as something to be induced from different points of view. Thus considerable variety and much interest are possible for imparting ideas, but there is a distinct loss of efficiency in establishing habits.

Dr. Eisenlohr,[1] for example, in speaking of the more general skill rather than the more specific habit, is enunciating a very dangerous principle, if he means anything more than that habits should be variously *applied*, when he says: "The more manifold and varied these repetitions are, instead of continually going over the same beaten track, the more unrestricted and unconstrained will be the acquired skill; for which reason we cannot enough recommend repetition of what has gone before, from a different stand-

[1] Schmidt's Encyclopädie der Erziehung, under the head of *Fertigkeiten*. Quoted in Radestock's, "Habit in Education," p. 7. Trans. by Caspari. Boston, 1886.

point of view, and under other conditions, especially in all mental studies."

In habit-getting no such repetition is adequate. The same habit path must be traveled in "the same old way" without modification, until the plastic nerve tissue sets. We may lead up to it and away from it in interesting ways, but then the time of practice is shortened. If, however, the practice is made more effective as a result of the interest and the attention which goes with it, as often happens, then surely something should be done toward making the beginning of our practice more interesting and its results more vital to the child.

It may be a question whether Andrews [1] is right in saying: "A mental experience of great intensity or interest results without repetition in a strong habitual tendency." . . . "A great flood in a single day tears out a path which a smaller stream would require years to form." But the analogy breaks down, because, although the result may appear the same, there is, until an experience has been established through repetition, a lack of the facility involved in habit. Consequently it seems much more likely that the larger number of associations, resulting from the intensity of the experience, leads to frequent repetition, and thus sooner or later to habit. Moreover, the act of attention is always enlivened by this intensity, and thus the repetition with attention which is the only really valuable sort, as will be seen later, is more likely to follow.

2. The amount of repetition. — It is hard to say just when reaction becomes second nature to us, *i.e.* automatic or habitual. Bagley suggests that habit-forming is like crystallization. A little more and a little more is added to a solution; but, if one stops short of enough to produce

[1] Andrews, B. R. On Habit, *American Journal of Psychology*, Vol. XIV., p. 146.

crystallization, all of the previous work has apparently gone for naught. Experience alone will tell how much practice is needed, and then only for average students in average situations.

All experiments and practical experience as well go to show that time is necessary for reaching the limit of facility and power possible of attainment. We must not expect it too soon of the child, even in simple reaction.

3. **Thoughtful and earnest practice essential.** — Moreover, the practice must be thoughtfully and earnestly undertaken. Bagley has this same point in mind when he speaks of "attentive repetition." [1] The great bane of practice has been, that it was and is so easy for the child to go through the form without the substance. The classic instance of the boy who had to write "have gone" two hundred times after school hours and, having finished, left a note for his teacher saying, "I have *went* home," is a case in point.

It is not claimed that there is no value in partially inattentive repetition. It is possible to commit words to memory by saying them over and over carelessly, but only at the expense of much unnecessary time; consequently, after various ways of securing adequate amount of practice have been considered, some devices for making practice not merely formal, but actual, will be taken up.

4. **The relation between repetition and initiative.** — James, in stating his third rule for the formation of habit, says, "Seize the first possible opportunity to act on every resolution you make, and on every emotional prompting you may experience in the direction of the habits you aspire to gain." [2] The writer has usually rephrased it for his pupils, — "Practice and create special opportunities for

[1] Bagley, "Class-room Management," p. 16. Macmillan, 1907. See also his "Educative Process." Macmillan, 1905.

[2] "Principles of Psychology," p. 124. Holt, 1890.

practice." If, then, the teacher wishes the child to have this zealous attitude toward practice, almost his only recourse is to the reënkindling of the initiative found to be effective according to the scheme of the last chapter. If the child has sufficient interest and initiative, he will continue his practice independently of further spur or suggestion, until he has mastered the desired ability, whether it be to throw a ball accurately, to draw well, to dance, to sing well, or to gain other habits.

If the initiative is not sufficiently strong, it may be renewed or it may be reënforced either by other sources of initiative or by special suggestion as to times, places, or occasions for practice. If the teacher is to furnish the occasions when the practice is to take place, the child not having sufficient initiative to carry him through, it may be done in several ways, as follows: —

5. The appointment of specified periods for practice. — 1. Appoint a specified time for practice, and insist upon practice during this period. This is the time-honored way of securing at least a time-serving practice on some musical instrument. The nature of the work done is not now to be considered. Time spent in the preparation of a lesson may be variously employed. Sometimes it includes time that a book or pen is held in the hand regardless of the attention. Even the pupil knows the tremendous difference between study of that kind and study in which a definite operation is performed and a definite result reached. Still it is good as far as it goes. There is no chance, when a specified period for practice is appointed, for time to slip by in the multitude of things to be done and for the practice outlined to be neglected. Nor should any time be selected regardless of its inconvenience for the child. The law of resulting dissatisfaction would defeat the end. On the contrary, try to choose a time that would be most agreeable.

6. Specifying the number of repetitions. — 2. Specify the number of repetitions.

A principal once gave a certain class three hundred examples as a drill in a certain process in fractions. He judged that they needed practice, and that with these done they would have practice enough. He did it because the class worked very slowly. The result was that, while working on the three hundred, almost every member of the class did two or three times as many examples as he had done before in the same period of time.

Similarly, in the writing lesson it is better to tell a child to repeat his copy a certain number of times than to give him the copy and tell him to practice.

7. Furnishing abundant and agreeable stimuli. — 3. Multiply the stimuli provocative of the reaction. If one is anxious that a little boy say "thank you" in a pleasing way, a game may be arranged in which he is offered various objects and makes the appropriate response. Each separate object will serve as a stimulus. If you wish him in deference to a lady or an elder to take his hat off as he bows, you may suggest all the possible occasions when such a bow would be appropriate; or, if he uses a wrong grammatical phrase and you wish to get him accustomed to the right one, you can write the correct form in large letters on a piece of paper and hang it in his room or where he is likely to see it, telling him every time he sees it to think of and speak a sentence in which it would belong.

This furnishing of stimuli should not be interpreted as meaning that the child should be constantly reminded. That is too much like nagging on the one hand and shifting of responsibility on the other. Whatever stimuli are given, the pupil should take upon himself the responsibility for making an efficient reaction.

8. Associating stimuli with the child's customary acts. —

4. Make such associations for the stimuli as to keep them before the child. No mother can be considered wise who keeps her small boy's toothbrush where he could not see it. Rather have it kept as near as possible to the place where he is obliged to look every morning when he washes his hands and face. Tell him whenever he thinks of or sees the place where he brushes his teeth to think of his toothbrush. Interesting rhymes if wisely displayed may also serve to connect this habit with the daily routine. According to the same principle, if every time a boy took a pencil or penholder in his hand, he thought that he must keep his back as straight as the pencil; and if, as he chanced to look up while he was working, his eyes rested on a "roll of honor" including the names of those whose backs always kept straight, or pictures of Mr. Straight and Mr. Crooked,[1] or even other children sitting noticeably straight, he would improve by the association of those stimuli with the stimuli he has already had for writing in a good position.

9. Practice as an outcome of environment. —5. So arrange the conditions that the desired reaction and its repetition will follow so naturally as to be almost unavoidable. The favoring and suggesting environment may be made to predispose the child; on the other hand, the environment may be made almost prohibitive of the habit.

It seems sometimes, for example, as if parents and teachers deliberately set about making the habit of study, *i.e.* of concentrating the attention in a certain field for a considerable time, almost impossible. At home the child has to work in the same room with a number of others. If callers come in, they are separated only by portières or an open doorway, from the room where the boy is studying.

[1] See Rowe, "Lighting of Schoolrooms," p. 69. Longmans, 1904.

If the baby cries, it is trotted out to where he is, and very likely he is asked to take care of it while his parents are engaged in other tasks. He is called upon to run and get or deliver this, that, and the other thing with only just time enough in between to begin to get his mind down to business. In school, matters are very little better. He is expected to study while another class recites in the same room, so that unless the teacher be lynx-eyed he is subjected to annoying and interrupting calls from neighboring boys for mental or material aid.

This is just the reverse of the requirements for a good habit of study, though the exceptional child with a vigorous initiative may be able to cope even with such conditions. Surely the principle — Make all the conditions such that the reaction will take place as naturally as possible — makes it necessary to favor the child, giving him every opportunity for concentrating his attention and only gradually introducing him to the more diverting and distracting conditions.

If neatness in papers is desired, pave the way by having the children hold up the hands to show that they are clean, by advocating the liberal and systematic use of the blotter, by warnings against spooning up the ink with the pen, and by other precautions making it easier than not for the child to write and keep his paper clean. After a while a soiled copy will be an eyesore to him, and he will himself find measures to guard against such possibilities.[1]

10. Keeping in practice. — 6. Let any interval in which practice has been omitted serve as especial occasion for its

[1] See Chapter XII.

Bagley reports that he did not find keeping the paper clean in writing period availed in other periods. If not, the method must have been bad in the stimulus used or the motive appealed to, since the whole tendency of such habits is by suggestion to extend themselves to similar situations. See p. 208 of his "Educative Process." New York, 1905.

renewal. That is, freshen up on the habit. One must "keep his hand in" is perhaps the ordinary form in which the principle finds expression. An objector might cite Professor James's paradox of our learning to skate in summer and learning to swim in winter as an argument for dropping practice for a time. This, however, is a special case, and is to be explained as the result of over-stimulation in the season for those sports producing a general waste of energy and lack of ability to attend to fine points, which time only can repair. The obvious verdict of experience is that it is necessary to keep in practice, to react occasionally along the line of any special habit of action or memory just for the sake of facilitating our responses. Consequently the expert musician, vocalist or instrumentalist, allows no considerable time to intervene without practice. Writing is continued long after the child secures a fair degree of proficiency, though often too much of the slow, labored, impractical sort of writing is drilled upon when an easy, legible, and characteristic handwriting is the real requirement.

11. **Decadence of neglected habits.** — Even such fundamental habits as walking, running, and even jumping, as promoted by active games, are often lost, as far as any real efficiency or buoyancy is concerned, by men and women only approaching middle age, simply because they do not keep themselves "in condition." Women (and teachers as well) frequently reach the decrepitude of advanced years [1] long before there is any excuse for it, except that they have violated the principle and practice of keeping active. It is

[1] Crampton, in the *Pedagogical Seminary* (Vol. XV., p. 230), suggests an interesting distinction between a child's *physiological* age and his *chronological* age. Is not the old adage more nearly expressive of adult age which says that "a woman is as young as she looks, a man as young as he feels," *i.e.* acts? The difference in one's actions or habits is after all the mark of age rather than lapse of years.

not often that a woman (or man) over sixty runs upstairs. For some reason, perhaps a good one at the time, practice was interrupted and later was never renewed, though the original reason for the interruption had long since been removed.

12. **Practice must be actual, not perfunctory.** — It is evident that the purpose in all of the above devices is simply to get the child practicing, and the quality of the practice is not particularly regarded. The next consideration must therefore be the principle that practice must be real practice and not the form without the substance. It is evident to any one acquainted with children that in spite of good intentions their shortsightedness is nowhere better illustrated than in their failure to keep themselves up to earnest, well-directed practice, even where they have made a good beginning.

Ebbinghaus,[1] Jost,[2] and others have noticed that the distribution of practice over intervals of time was advantageous. This is to be accounted for rather by the disadvantages of crowding practice on the other plan, so that it became not actual, but perfunctory.

The devices which go to making *practice* not merely formal, but *actual*, are suggested by the following maxims: —

13. **The renewing of initiative.** — 1. Use devices designed to recall to vividness the relation of the desired habit to the child's initiative. It is not enough to gain an initiative at the start; but, if practice is to be secured and especially if it is to be secured effectively, constant reminders of the good intentions are desirable.

For example, a person who wishes to make sure of a

[1] See his "Ueber das Gedächtniss." Leipsic, 1885.

[2] See "Die Assoziationsfestigkeit in ihrer Abhängigkeit von der Verteilung der Wiederholungen," *Zeitschrift für Psychologie*, Vol. XIV., p. 436.

certain formula might, in order to promote practice of the right sort, put a memorandum on his desk, at the sight of which he would repeat the formula. A clergyman who wished to speak more distinctly would write a big "S. D." in thin pencil across his manuscript to remind him to continue in his effort to improve.

14. A definite degree of skill or facility as the pupil's aim. — 2. Have the child understand that a certain degree of skill or facility must be attained, or that certain tests must indisputably confirm his success. Children often show some ability in other ways, but fall behind their classes in some of the automatic processes of arithmetic. In many instances investigated by the author, the children seemed not to grasp the necessity of getting these automatisms quickly. When asked, for example, how many are 7×8, there was usually considerable hesitation or perhaps no response. Their attention was called to the fact, and they were given 4×6. Results were perhaps somewhat better. After a few other combinations had been given, they were asked to give 2×2, and the reply came instantly with every indication of automatism. Then they were told to get all the multiplication facts by a certain date as well as they had 2×2, and they knew then definitely just what degree of facility was expected of them, and would often return by the date with the facts learned.

Similarly, if children in lower grades knew that all we wanted was a well-established ability to write neatly, legibly, and at a fair rate of speed, it would not take eight years of practice to develop a handwriting finally of no use except for show occasions. The ordinary habit of the child is to write hastily and carelessly, while the habit of writing very, very slowly and carefully, producing well-formed letters, is practiced only on such occasions as the hurried habit of writing is debarred. These are two very different

habits. Much of school drill in writing misses the mark because the show-writing habit is the only one taught, while the ordinary handwriting is developed or left undeveloped by the pupil as he sees fit. In other words, in teaching writing we too often attempt to secure habits we *don't* want and very seldom aim definitely at the habit we *do* want.

In the same way, preliminary work in Latin, Greek, or other languages should furnish the child not only with the understanding of the structure of the language, but also with the habit of systematically placing and interpreting the forms encountered. Correct habits of translation are seriously endangered under ordinary school conditions, if involved translation is begun before there is any automatic thinking of the uses of forms or any habit of thinking down through a list of possibilities for the usage found in this particular sentence. Habits of translation should be established of two sorts. Given a word in a certain case, not only should the various uses appear automatically, but, what is even more important, the ways of translating so as to bring out most effectively those uses should become available as a matter of habit. Otherwise the child takes the words in their order and puzzles out the best sense he can make, regardless of cases, and often with most astonishing results, as instanced by a boy who translated a passage from Xenophon: "And they all were looking sorrowfully on the ground with their heads cut off."

15. Earnestness and effort a necessity of practice. — 3. Encourage the child to earnestness and effort in his practice. He should be alert both for points at which he can improve and for ways of improving at those points.

It is very easy for the child in the multitude of directions given him to fall into a certain laxity and a *laissez-faire* attitude in sheer self-defense. He will often need a little jostling mentally to get him out of his sleepy condition.

Show him how many special difficulties are lurking in this habit waiting to catch him, and get him on the lookout for them. In mathematics, if we do not keep our wits about us, we are easily led astray by some misapplied automatism. The writer once heard a company of children singing a multiplication table to the tune of Yankee Doodle. Combinations ridiculously incorrect were sung. As practice (which it was supposed to be) it was the worst of failures.

If the child tries, and tries hard, to get a habit quickly, more accurately, or easily, the practice will mean something. This is evidently very difficult unless one has already secured a strong and decided initiative. Moreover, encourage him to study and concentrate on the hard points, the places where energy and effort are needed. The piano practice of most small children yields pitiably small results, because they play over the parts of pieces, which they know, and fail to put in the time at the points where they have difficulty.

Experiment is what we really mean when we say "try." When we say "try hard," we mean experiment in every way possible for the pupil to devise. In the child's effort much of the experimentation may be below the level of his conscious action. He just tries.

This earnestness and effort are only possible when the physical condition of the child is healthy and unfatigued. The investigations of Woodworth [1] and Swift,[2] together with the general experience of athletes, all combine to show that practice carried beyond the fatigue point is disastrous. Attention flags and undesirable variations creep in and become more or less permanent according

[1] Woodworth, "The Accuracy of Voluntary Movement," *Psychological Review Monograph Supplement*, No. 13, 1899, pp. 1–114.

[2] Swift, "Psychology and Physiology of Learning," *American Journal of Psychology*, Vol. XIV., pp. 216–223.

as they are discovered and counteracted or in their turn yield to further variations. The college ball nine starts out promisingly, but "goes stale." The tennis expert practices so much that he "gets way off his game." [1]

Over-practice not only causes inattention, but makes some form of misdirection of attention-processes habitual, and with that fixes as habits all subconsciously made variations in the reaction itself. Woodworth [2] is right in his insistence that practice must be *successful* for the best results. Johnson [3] says that his results show that "a short exercise often repeated is the best method of practice for rapid development of accurate adjustment of muscles. Long practice in writing, drawing, etc., seems to be time and energy wasted. Not only are inattentive habits [4] cultivated, but every wrong adjustment gains a place in the chain of subconscious memories, and therefore delays the development of the control over the muscles for accurate adjustments."

16. The direction of attention to special points. — 4. Show the child, if there is danger of his being unable to find them himself, the definite points to which he must attend or to which special attention must be given.[5]

[1] Compare Chapter X., Section 6.

[2] Woodworth, "The Accuracy of Voluntary Movement," *Psychological Review Monograph Supplement*, No. 13, 1899, pp. 1–114.

[3] Johnson, "Researches in Practice and Habit," Studies from the Yale Psychological Laboratory, Vol. VI., pp. 51–103.

[4] Johnson's term "inattentive habits" is subject to criticism. One cannot have an inattentive habit any more than he can "pay inattention." Bad habits of attention are really meant.

[5] The necessity of attention for selecting the better reactions (*i.e.* more satisfactory) is illustrated by Professor Thorndike in an experiment which he describes as follows: "Close your eyes and write as well as you can with your left hand (right hand if you use the left ordinarily) some sentence of about eight or ten words. Keep the eyes closed and repeat the writing twenty times without

When a class of pupils is given a new letter or word to write, it is not enough merely to have the children earnest and eager in their attempts, but much can be done in the presentation of the habit to point out the precise points to be watched. The teacher's own trials or his experience shows him, for example, that the children will fail to close the small "a" at the top, or will overdo it. The children should profit by being warned to close the space exactly.

Much of the point of studying the nature of the reaction advocated in Chapter VII has, aside from its general value, its application in enabling the teacher to point out all through practice just the difficulties needing attention, and in helping the child to keep them prominent in his own mind. There are few habits — memory, muscular, or both — in which we cannot pick out, if we are able to analyze them at all, the special word, the twist of the thumb, the swing of the arm, or the movement of the eye which is one of the stumbling-blocks to reaching perfection in that reaction. In playing the "C" major scale on the piano, for example, it is easy enough to play the first three notes with the thumb and two fingers, but then the learner must slip his thumb under the fingers and play four more, then slip the thumb under again, and so every three, and then four, notes. This strange little habit of slipping the thumb under must

seeing the results. In each case write as well as you can. Number the sheets in order 1 to 21. Then write twenty copies (still with the left hand) with eyes open, in each case writing as well as you can. Number them 22 to 41. In which case did you improve in the practice, from 1 to 21 or in the practice from 22 to 41? Why?" Thorndike, "Principles of Teaching," p. 231. Seiler, New York, 1906. Compare also Judd, in Yale Psychological Studies, New Series, Vol. I., p. 185, on Practice without Knowledge of Results.

function at just the right time to the hundredth of a second. In playing scales, these then are the points of attention.

Any sort of way of getting these crucial elements writ large with the object of securing the sharpest possible focus, will be successful. Clearness is gained by the analysis of the intricacies of the habit. Not only is attention directed to the point of difficulty, and so made more effective, but repetition is made possible in minor details which would otherwise be inevitably slighted.

17. **Desirability of the method admitting of the most actual practice.** — 5. For habit-getting use the method admitting of the greatest possibility of actual practice. By possibility is here meant possibility considering the whole situation.

If anybody advertises to teach a person to speak German by his wonderful method in six lessons, put him down as a fakir. He can teach just about as much in that time as a parrot could absorb. To speak German or any other language, a large amount of practice is necessary. It is quite obvious that the way of getting the greatest amount of practice in speaking German is to go where the only language heard and the only language by which one may be understood is German. The practice must be obtained, and no matter how stupid one is, he learns to speak the language without regard to the suffering of the natives.

For similar reasons, learning to swim by correspondence is not profitable, unless the whole burden of the correspondence is "Get into the water and strike out, not caring whether you are on top of the water or at the bottom."

In all habit-getting any method that really secures actual intelligent practice is a good one. It is hoped the difficulty of providing such a form of practice will be

overcome more generally with the aid of the principles here set forth.

18. Psychological experiment and practice. — The writer has endeavored in this chapter to include and to sum up in the principles stated the contribution of the experimentalists. It is especially here in the relation to practice that the experimental psychologists have contributed most to the methodology of habit. The use made of the experiments seems meager compared with the labor involved in a single investigation, but it must be borne in mind that each experiment, no matter how suggestive it may be, is too specific in itself to admit of generalization, until it has been brought into relation with others, and in much more complex conditions than those serving the experimenters' purposes as yet. The mere complexity of conditions involved in the school and home life of the child implies in itself so many more factors than are to be found in the experimental records as to make it quite possible that a general principle valid under laboratory conditions would be offset by counter principles growing out of other factors in the schoolroom. In time, doubtless to complete the methodology of practice, an experimental will be combined with an empirical basis. Neither the pedagogue in his observations nor the psychologist in his experiment can afford to ignore these foundations of habit-forming. Where the psychologist leaves off, the advocate of experimental pedagogy must begin. To him the field of habit is offered as worthy of his best efforts.[1]

[1] For list of researches in the various phases of habit, see the Bibliography. For those dealing with the getting the idea of the habit, see under the names of the following authors: Dearborn, Earhart, Huey, Judd, and Stone. For those taking at least some account of initiative, see under the names of the following: Judd,

19. **Summary.** — Repetition is the desideratum of practice. It must be neither inattentive nor too varied in character, but instead the same neural path must be traversed with attention and effort, until automatic action is established. Intensity or interest increases the number of associations, and thus promotes the frequency of repetition.

The amount of repetition depends on the nature of the habit, and must be determined by experience. Practice which falls short of producing the habit is largely wasted.

The practice must be thoughtful, earnest, and attentive. The attitude toward the practice should be one of zeal and eagerness not only to seize upon opportunities presenting themselves, but also to create opportunities for practice. A strong initiative is the only hope that we have that the child will bring about for himself occasions for practice.

If the initiative first aroused is not sufficient of itself, it must be called into play as often as effective use may be made of it. Where the initiative is not adequate to securing the desired practice, the teacher may furnish stimuli or occasions for practicing the form of the reaction. This may be done in any or all of six ways:—

1. Appoint a specified period for practice, and insist upon practice during that period.

Swift, and Woodworth. For those dealing with practice either in its relation to habit directly, or much more often in its relation to memory, see under: Angell, Bair, Berger, Bolton, Bourdon, Bryan, Davis, Downey, Ebbinghaus, Ebert and Meumann, Exner, Gilbert and Fracker, Johnson, Jost, Judd, Kennedy, Müller, Netschajeff, Reuther, Smith, Stein, Thorndike, Volkman, Winch, and Woodworth. For those investigations dealing more particularly with preventing exceptions or the conditions under which exceptions arise, see Bawden, Stein, and Vogt.

2. Specify the number of repetitions.

3. Multiply the stimuli provocative of the reaction.

4. Make such associations as will keep suggesting the habit to the child.

5. So arrange the conditions that the desired reaction and its repetition must naturally follow.

6. Secure facility of reaction by making the practice recent.

In guarding against the grave danger of the child's practice being formal rather than actual, the devices suggested are: —

1. Use devices designed to make vivid the relation of the desired habit to the child's initiative.

2. Have the pupil understand that a certain definite degree of skill or facility must be attained, or that certain tests must confirm his success indisputably.

3. Encourage the child to earnestness and effort in his practice.

4. Show the child the definite points to which he must attend.

5. Use the method of securing habits admitting of the greatest possibilities of practice.

CHAPTER X

Methods of Preventing Exceptions

"Even the worthy Homer sometimes nods." — Horace.

"So take and use thy work:
Amend what flaws may lurk,
What strain o' the stuff, what warpings past the aim!"
— Browning.

1. **The danger of exceptions.** — Professor Bain, in his "Psychology of the Emotions," in speaking of the formation of the habit of getting up at a certain time every morning, writes: "I cannot doubt that there is such a thing as literally starving a very acute pleasurable or painful sensibility, by crossing it, or systematically discouraging it. So that on both sides the force of iteration is softening down the harsh experience of the early riser, and bringing about, as time advances, an approach to the final condition of mechanical punctuality and entire indifference. Years may be wanted to arrive at this point, but sooner or later the plastic element of our constitution will succeed. Not, however, I think, without the two main conditions of an adequate initiative and an unbroken persistence."

In these sentences Bain has summed up the requirements of a methodology of habit in apparently two points. But an analysis of the last shows immediately that it not only implies the practice insisted upon in the last chapter, but that persistence in practice should be unbroken, *i.e.* free from exceptions, lapses, and the like.

His very next sentence atones for the apparent neglect of the disintegrating power of exceptions by adding: "If the power applied in the first instance is inconstant or merely occasional, and if periods of indulgence are admitted to break the career of the learner, there is very little hope of ever attaining the consummation desired.[1]

Professor James has illustrated this very aptly by comparing the exception to the dropping of a ball of twine which is being wound. The mischievous tendency of the ball to unwind much that already had been wound, is illustrative of the mischief accomplished by every lapse from the pathway of the habit.[2]

2. **The two sources of exceptions.** — The sources of exception to any definite habit in course of formation must be found in some change in the circumstances.[3] Either the *initiative* which made possible the first efforts has materially weakened, or a *new stimulation* opposed to the habit has come prominently into the situation engrossing the attention and displacing the stimulation favorable to the desired habit. Recognizing the likelihood of either of these possible changes becoming actual, a scheme for eliminating exceptions must make general provision for these two kinds of contingency in whatever form they may arise.

A child may be on the point of developing a very good slant in his handwriting when an example of an extreme

[1] Bain, "Feeling and the Will," p. 458. London, 1865.

[2] "Each lapse is like the letting fall of a ball of string which one is carefully winding up; a single slip undoes more than a great many turns will wind up again. *Continuity* in training is the great means of making the various systems act infallibly right." James, "Principles of Psychology," p. 123. New York, 1890.

[3] For a study of exceptions and variations from habits *already formed*, see Bawden, "Study of Lapses" in the *Psychological Review Monograph Supplement*, Vol. III., No. 4, pp. 1–122.

backhand slant happens to be brought to his notice. It is new and striking, appeals to him by its individuality, and before the teacher knows it he has begun seriously to lapse from a habit almost established. So, too, a new and striking handwriting, though suggested by the imagination or experiment, may easily prove a sufficient stimulation to start a new habit path. This illustrates the change wrought by an opposing stimulus.

In case of a determination to get up at a certain time each morning, the attempt goes well until a morning comes following a night of comparative sleeplessness. Then attention is given the tendency to finish the sleep and not to the initiative, which hardly reaches consciousness at all.

These two sources of exception to, or modification of, the habit in the process of formation, the weakened initiative and the opposing stimuli, make the prevention of exceptions no less difficult than securing abundant practice. They necessitate a knowledge of the springs of initiative in the child, and a knowledge both of the stimuli favorable to the habit and of those opposed to its development but likely to be associated with the favoring stimuli.

In this phase of securing habit, therefore, great skill is required, and the more definitely the habit is studied and understood by the teacher, the better equipped he will be to do his duty at this point. Of the methods of preventing exceptions, first those looking to the removal of the sources of exception will be suggested, and then they will be followed by those principles safeguarding the child against such as cannot be removed.

3. Need of studying tendencies to modification. — 1. Study the habit with all its likely tendencies to modification. Of all the devices to be borne in mind

to anticipate or counteract the possibility of modifying a habit, emphasis should be laid on this first analysis and study of the habit, even though it has been insisted upon in Chapter VIII and again in Chapter IX.

The variations from slant form of letters and the corresponding mode of joining them make penmanship one of the most evident illustrations of the need of knowing these tendencies. The child's constant tendency to adapt his degree of obedience to the necessities of the situation from the point of view of the minimum, is another evident case. The parent or teacher who knows the kind of obedience he intends to have, and does not tolerate first steps in the direction of exceptions, will have little trouble.

4. Reënforcement of uncertain initiative. — 2. Reënforce, by especial support at the point or time of weakness, an initiative which is likely to fade.

If one who wishes to form a habit of getting up early each morning, reënforces his intentions with an alarm clock and the services of an athletic friend, his chances of getting up at the time set are good.

If a child that is habitually truthful is put in a position of special stress by his teacher, a lapse from the habit may occur; but, if the teacher recognizes this fact and the child is made to feel the dependence placed upon him, the pleasure his honesty gave his teacher and his parents, and the foolishness of throwing away this good opinion, the child's initiative will probably have all the backing necessary to carry him safely over the treacherous ground. A music teacher teaching a child unable to sing the scale, the point being reached where the pupil is inclined to balk, may point up vigorously with his finger and say kindly but firmly, "Up on your toes." This is both reminding the child and reënforcing his initiative. Such

combinations of appeal may often be effected very advantageously. Some of the most skillful work the author has seen in the schoolroom has been due largely to the ability of the teacher to keep constantly before the child his intention to do his best; that is, to throw conscious effort into his work. It was *not* done by calling work to a halt from time to time, and saying, "Remember, children, each one is to do his best"; but by a constant running fire of suggestion or favorable comment here, a mild and judicious criticism there, a significant look, or a tap of the pencil, — all effective, though so thoroughly interspersed in the teaching process as to be no intrusion of the discipline into the instruction.

5. Removal of stimuli. — 3. Remove, if possible, stimuli that menace the habit. Although this is in fact quite impossible, at times, often it is very feasible. Association only with people who use good English may not be possible for many, but it will certainly be a great help to the child in acquiring correct habits of speech. Good examples of language, literature, art, and music should be at least the aim of the schoolroom, so that no unworthy stimuli may contribute there to unfortunate habits of expression. In discipline, one ingenious and mischievous boy may, if allowed to go unnoticed by the teacher, furnish stimuli for more sorts of tricks and exceptions to habits of study and attention than a teacher could rid himself of in a term, — all unnecessary, if the originator can only have his originality turned into more desirable channels, and at the same time be given in another way a resulting satisfaction equivalent to that found in the admiration of his daring and ingenuity by the less disorderly youngsters.

6. Fatigue as a stimulus to modification. — It is doubtless true in games as well as work involving the highest

skill that to play or work when fatigued is to run the chance of some little omission here, a cue missed or mistaken there, just enough to make uncertain the habit path. Keeping within the limits of what can safely be done, avoids this danger.[1]

The athlete who gets "stale" is making exceptions just as truly as he who breaks training. So, long tasks imposed, notes to be taken, and the like may become stimuli to exceptions. Work of this sort, therefore, should be brought down to the limits of what can be done reasonably in a given time. Is it not possible that the lack of habits of thoughtful study so common in our higher institutions is a direct result of the crowding of the studies in the grammar grade and high school periods?

7. The weakening of stimuli. — 4. Reduce to the minimum stimuli opposed to the habit. Even if they cannot be removed, they may be made less cogent or compelling. Consequently, this is a more practicable maxim than the one preceding it, and the illustrations in modified form may already suggest themselves as fully appropriate here. Children must inevitably know of cases of disobedience in their schoolmates. But, if they do not see disobedience going unpunished, they will not get data (in the way of apparent satisfaction without deterrents) to act as stimuli to much experimentation in a similar direction for themselves. If they do not read books about pirates and Indian fighting, they will be less likely to wish to break away from the peaceful habits of the ordinary citizen. In arithmetic the too frequent hurry to complicated processes before the pupil has mastered the separate subordinate facts, leads him to

[1] Compare Swift's experiments for effects of fatigue and for tendencies to vary the reaction in his "Mind in the Making," pp. 173–185. Scribner's, 1908.

guesses resulting in a wrong tendency which suggests a similar reaction on the next occasion.

Any expedients by which bad examples may be removed, undesirable excitants to the imagination lessened, hurry and worry minimized, that fatigue may be avoided, and a thousand other possibilities of similar tendency, — all these must contribute to the prevention of exceptions to desirable habits.

8. The checking of variation. — 5. When the habit has reached its maximum efficiency, guard against further variation by special commendation of the reaction.

The tendency of the child to vary his action even experimentally and often without consciousness of it, Professor Baldwin's principle of "accommodation," [1] often results in the discovery of new stimuli and new paths of reaction, which not only constitute the basis of the golfer's improvement, but also when he has reached good form and is trying for still better things, explains his losing ground again. Children are constantly imitating, constantly inventing and making a new accommodation or adaptation to the given situation. These little variations are a tremendous help to the child in achieving a habit; but if the habit has once taken form and been perfected, they become very mischievous. On this account a high degree of accuracy and facility having been reached, it would be wise to call the child's attention to that form of reaction and tell him to make all the others like that. It will not do to call too much attention at that time to the stages of, or factors in, the reaction itself, as that only tends to make variations, which are evidently undesirable when the reaction has already been safely reached or almost reached as an automatism.

[1] "Mental Development of the Child and the Race," p. 217. New York, 1895.

Practice is, of course, not to be relinquished; but, whereas its aim is a greater degree of proficiency before the reaction is perfected, now it is rather to keep up the proficiency already attained. This, of course, applies more especially to the more subtle points in teaching. A musical tone or a French "u" may be difficult for the child. He tries and, after practice, gets nearer and nearer to it. His teacher finally hears exactly the right sound, and says, "That's it." — "Keep that up." — "Do that again," and so on. The child's attention is called to the result and the general feeling of the process. If he can retain it, he has mastered the reaction, and only needs more practice to make it automatic.

9. The elimination of difficult points. — 6. Simplify reactions and rid them of special points of difficulty by securing smaller contributing habits before the more complex are attempted. In the chapter on methods of practice, one of the maxims to be observed was "Show the child the definite points to attend or to which special attention must be given." Here it is not to direct the attention but rather to take a habit, analyze it into its parts, and then direct practice to those parts themselves until sufficient skill has been achieved to warrant the addition of the rest of the reaction desired.

In attempting to get the habit of neatness in writing with ink, the first essential is that the child see to it that his hands are clean. But there are other essentials. If he has the habit of spooning up the ink, a drop is almost certain to fall from the pen when it is held vertically. If he holds his pen so that only one point touches the paper, he is almost certain to scratch and throw little specks of ink all over his paper, which are likely to be rubbed soon into bad blots. For neat penmanship, the habit of dipping the pen properly and that of holding it

correctly are second only to cleanliness of hands and effective use of the blotter. Four subordinate contributing habits are to be secured, therefore, before the one habit of neatness in written work can be expected.

Again, in keeping an absolutely fixed time on the piano it is often desirable to use a metronome. It enables the pianist to keep the time when otherwise there might be many unnoticed points of hesitation.

Another application of this sixth maxim is found in the teaching of English. It is a great help to the child to divide up his composition work into three sorts, — description, exposition, and narration, — getting started on the important habits fundamental to each separately, and then finally thinking habitually and even subconsciously in all literary work of these three possibilities and deciding which is involved or to what degree elements of one are combined in a part or the whole of another, as the various phases of the writing change.

10. The use of inhibition. — In the remaining half of this chapter we are to deal with the answer to the question, "But what can be done when the weakened initiative, the opposing stimuli, and the tendencies to vary can be counteracted only in part or not at all?" The only answer to this question is, "Awaken the child's inhibitive tendencies."

We are often conscious of holding ourselves in check or of restraining ourselves, of refraining from an action sometimes for good reasons, often because some vague element in the situation suggests just enough of strangeness or uncertainty or of caution to lead to a checking of the tendency for a moment's further investigation.[1]

[1] An excellent example of this is shown in Jacob Riis's "Autobiography of an American." New York, 1900. He was on the point of shooting an obnoxious white dog which had apparently

A boy with hand uplifted about to throw a wad of paper across the room sees the eyes of his teacher turned his way. The movement is immediately checked, and to disguise the meaning of the uplifted hand he begins to smooth his hair. This halting of the movement is an act of inhibition. The stimulus to this act of inhibition was the teacher's glance. The reaction was the movement of muscles checking the originally intended reaction. The motive, or reason, or initiative for the inhibitory act was the consciousness of the disapproval, humiliation, or other punishment that would result from throwing the paper, the source of this incentive being in the instincts and emotions.

By inhibition is meant, then, the process of checking any imminent tendency to act. It may result in a temporary negation of action, or more usually combined with that, as in the above illustration, is the substitution of another form of reaction (there the smoothing of the hair) for the one intended. In preventing exceptions to the habit pathway, evidently the reaction to be substituted is that of the habit itself. Consequently, the use of inhibition will be limited to the possibilities it affords of resisting undesirable tendencies to make exceptions, whether they arise from opposing stimuli or tendencies to variation.

11. **The stimuli and motive of inhibition.** — This checking tendency, this inhibition, must have a motive and a stimulus of its own, even as the habit itself. It implies a

taken refuge in a lumber pile in the dusk of the evening, when his finger was stayed on the trigger, and the white object proved to be the shirt sleeve of a man with whom he had had trouble that very morning. Had he shot the man, he would almost certainly have been convicted on circumstantial evidence of intent to kill.

positive reaction, if it is to counteract or check positive tendencies, and must be dependent, therefore, both on its own stimuli and its own initiative as involved in the mind-set with all its factors of intensity, of recency, of resulting satisfaction, of previous mental attitudes, and, to a certain extent, therefore, on the number of times the tendency has been put in practice.

What is to call forth this inhibition? Plainly the excitation must be the consciousness either of a new stimulus, which has crept into the general situation, or of a new or unintended tendency in the course of the reaction. The remedy must consist in developing in the student alertness to discover the new element in the situation or the variation in the reaction, and then to fortify himself against hostile tendencies. Accordingly, to save the child from lapses there are two modes of procedure.

12. **Guarding against probable temptations.** — 1. Make plain the fact that certain variations either in the situation or the reaction are likely to occur, that they are temptations, and must be overcome.

In sewing, as soon as an unevenness in the stitches appears, or when an increasing irregularity is discovered, these departures from the standard must be heralded by the pupil as temptations threatening the habit on which the quality of the work depends. Evidently they represent variations in the reaction.

Children may be well on the way toward a habit of taking a last glance at the word just written to make certain that it corresponds to their intention. Written work is prescribed that must be done in a hurry. The new element in this situation, hurry, if not diagnosed as a temptation, may lead the child to save time at the expense of taking the glance. In that case exception

has occurred. He must recognize as a distinct temptation to lapse, either the hurry or the tendency to omit the glance, and so vary the reaction. This recognition of the danger should be followed by a definite resolution not to yield.

In getting the habit of hesitating to write a word until he is certain of the spelling, a pupil may recognize the tendency to guess rather than consult an authority as a definite trial of his strength likely, if not resisted, to lead him to a habit of guessing without his noticing the fact at all.

In almost any branch of study, — arithmetic, history, geography, grammar, and the like, — instances occur where the tendency to guess should be recognized or discovered, — instances where smooth automatic action should take place, but does not. Many a teacher of history, for example, has to look up on each occasion the names of the official positions in the President's Cabinet. This list should be made automatic, even if the changing personalities are not. The failure to make sure of these as soon as any of them have been forgotten, should be regarded as a temptation to lapse from a habit of thoroughness very desirable in a teacher.

A man who can become a really great financial leader must be conscious of his own integrity in relation to affairs involving money. But this consciousness of his own integrity may lead him to a similar confidence in his judgment as to the moral quality of practices such as getting around unjust laws or taking chances on their enforcement. Success and power do not ordinarily sensitize men either to their weaknesses or their limitations. An indication of such weakness is that warping of conscience which makes it possible for a legislator to accept money directly or indirectly for voting privileges to a

corporation, though he reason that the community is to be benefited and that he should vote for the measure in any case. The offer of the official of the corporation is no less indicative of moral limitation. The first tendencies to lapse from a habit often come in disguise, but usually the disguise is very thin.

In this connection a very clear warning must be given against suggesting to the child variations and temptations which he would never have thought of, if not suggested. The mistake of the teacher who told her class of ten-year-old boys not to stumble on the stairs, is evident.

13. **Warning against first tendencies to lapse.** — 2. Put the pupil on his guard against the *first* tendency to lapse. This rule is a corollary of the one preceding. If variation tendencies in the habit are to be guarded against, certainly the first tendency in that direction should be noted and inhibited before it has a chance for repetition. But it is not the mere avoidance of repetition and jeopardy of the habit that is the danger; with that is combined a clogging of the habit machinery out of all proportion to what would otherwise be the importance of the exception.

Children who have been made sensitive to these first tendencies will not write a dozen copies each a little worse than the preceding.

Blots and soiled spots on papers will be recognized as dangerous; first stretches of the truth, temptations to leave things in disorder, to disturb others, and the like will all be recognized as evils, but also as stimuli to inhibition. One of the most important and difficult functions of the teacher is to assist the child at the critical moment when the tendency is just on the point of worsting him; and fundamental to this effort is the habit of *noticing* the first indications of a failure to attend, of

subtle friction tendencies, or of incipient counter attractions. Many teachers fail through an inability to see their classes, not because of defects of sight, but through lack of sufficient alertness to keep track of the children who are not included in the group with which they are concerned at the moment. If disorder is seen, the teacher's best judgment can indicate what is to be done about it; but what is to happen when it is not seen?

14. **Positive and negative initiative.** — From the standpoint of enlisting initiative toward inhibitory tendencies, it must be borne in mind that the positive initiative leading to the habit will itself serve as initiative (of a negative sort) for the inhibition of contrary acts. But aside from that negative sort of initiative, it often happens that some instinct plainly involves the inhibition as truly as jealousy inhibits sympathy, or that emotions, interests, and disagreeableness of the failure to inhibit may check action. In fact, any motive may contribute directly to the act of inhibition. With these two considerations in mind, the five points following will explain themselves: —

15. **Resolving against lapses.** — 1. Prepare for recognition of the danger by leading the child to make a definite resolve against lapses in general, and particularly of the sort feared. Enlist his persistence, effort, and determination not to be beaten; and, when he begins to get discouraged at the difficulty of this bit of fingering on the violin or piano, or even at succeeding in making his various lines meet at the same point in mechanical drawing, he will recognize that this is the time of trial, when he is to show the kind of stuff he is made of.

In writing he may be forming the habit of using variety of expression. The situation calls for a word used before. In spite of the tendency to continue with the same word, as a result of his previous resolution, he tries, rather

than give in, all the resources at his command, until he finds a new expression or is convinced that there is no way of substituting for the word in either sentence.

A college boy has been warned against the use of translations, and has resolved that he will persist in making his own translations. An inexperienced instructor gives out an impossible lesson and the students generally go and secure translations. If anything is to save him from lapsing from his habit, it will not be an unreënforced initiative, but the resolution made to provide against just such a contingency.

16. Preventing exceptions by combining positive and negative initiative. — 2. Connect by a special provision the inhibiting tendency and its motives with the initiative for the habit. If a parent wanted his son or daughter to stand with back straight and chest thrown forward, the pride of the child and approval of his parents would be the positive initiative. Tendencies to stoop would be disapproved equally positively, and fear of becoming like some sad example of his acquaintance would serve as initiative to the inhibition of the stooping tendency. But both of these would act in a way for the inhibitory act, just as both would work together in the positive function of one and the negative of the other for the habit itself.

In practical life this is often accomplished by warnings, "If you allow that for a moment, it will be the end of you," etc., etc., through a long list. This is helpful and even pedagogical, in so far as the caution succeeds in associating closely with the tendency to lapse a warning vividly calling up the connection of the desired inhibition with the initiative of the desired habit. The teacher of manual training will warn a boy who is fitting some pieces for a picture frame, "Be careful about those

corners; you might just as well throw the whole business on the scrap heap in the first place as to make a mistake there."

By various strong expressions (and even stress of voice seems to count) associations are formed. At times quite artificial associations may be made, as when one prone to anger checks himself until he has had time to count thirty. Before he has finished, associations connected with his initiative for controlling himself are stirred, and probably the temptation resisted.

How beneficial prayer and meditation may be in just this particular, is evident. If there were no spiritual advantages in prayer and meditation beyond the possibilities they offer of keeping present and practical man's ideals and lofty motives, on those grounds alone they would still be worthy of rank among life's most uplifting influences.

These illustrate very forcibly the possibility of connecting motives of inhibition with those for positive action, since the roots of positive action in uplifting mankind are no less buried in high motives than are those of the more often emphasized inhibitions and prohibitions.

17. Use of concrete reminders. — 3. Supply the child with concrete reminders of the original intent. Various insignia, either of honor or of office, — buttons, ribbons, pins, etc., — may serve to counteract by their presence tendencies otherwise alluring. Similarly proverbs written on the blackboard, class mottoes, displays of superior work, rolls of honor and other lists, or rewards of the faithful, by their presence to the eye, are very likely to be suggestive of good impulses at the time of the temptations to lapse, nor should the fact that boys wearing Audubon buttons have been known to steal birds' eggs be allowed to act as a very discouraging factor in the use of such reminders.

18. Picturing painful consequences of lapses. — 4. Pic-

ture for the child the painful consequences of failure to acquire the habit desired. The child is ordinarily unable in a cold-blooded fashion to look ahead and see the outcome of his action, good or bad. Many a little girl has been genuinely surprised at breaking her doll when she had persisted once too often in throwing it to the ground. The person of experience sees how his own character, with its merits and demerits, is the outcome of his own choice under the conditions in which those choices have been made. He can therefore conjecture roughly at least the possible outcome of a course of action. The imagination of the child is much better fitted for an aimless play of fancy than for such definite forecasts, unless aided in them by a vivid portrayal on the part of the teacher or parent.

A little girl of twelve years may not have imagination enough to see the pleasure that she will have and give, if she persists in daily practice on the piano; but her mother may be able to show it to her by calling up an array of imaginary occasions when talent would result in great satisfaction and many advantages to her.

If to this picture is appended a doleful one representing her as lamenting in the future her inability to play, and sorrowing at the good times missed on that account, the initiative on the side of inhibition as well as on that of practice will be greatly strengthened by the contrast.

The advantages of order, diligence in certain lines, punctuality, generosity, politeness, and the like are not always apparent to the child, and considerable suggestion may have to be offered before his imagination could be said to develop an initiative of any value. The child has become accustomed to an irregular, selfish, and rude manner of life, and does not appreciate its disadvantages. In such instances his imagination must be quickened, and perhaps by sad experience itself. For in extreme and in

exceptional cases it is often in connection with the lapse itself that a realization is gained of the advantages of this or that habit. For example, a dog of the author's acquaintance fell through the ice of a lake almost at the instant of disobedience to a call intended to guard him from the danger. He narrowly escaped drowning, and apparently out of gratitude for his rescue was converted from a most desultory to a most punctilious obedience.

19. Making painful experiences effective. — 5. Make real in case of actual lapses the painful experience, and prolong it. If the anticipation of unpleasantness is a deterrent, its realization should prove more deterring. The picture of the mother dragging her howling infant all bedraggled with mud, by the arm, and saying savagely, "Didn't I tell you not to go near that place?" is certainly a familiar one. A highly suitable occasion is pictured for developing not only the original initiative to obedience, but its subordinate checking or inhibitive tendency. Whenever that particular situation comes to view again, the emphasis on its unpleasant associations is likely to prove effective.

The device employed by a principal to prolong the painful consequence of stealing is an excellent illustration of the application of this rule to a hardened case. The child was required to report to the principal every day for the rest of the year whether she had taken anything that day. Tactful treatment and commendation where it was deserved undoubtedly made this severe measure beneficial.

There are many ways of reminding and intensifying the consequences of exceptions made to the habit-forming process. The child should feel that it is an evidence of weakness on his part, but must not be so humiliated as to become discouraged. For the deadening effect of his discouragement would go far toward counteracting any

initiative he might otherwise have. A child who has handed in a paper which is far from neat, may perhaps suffer both by having to copy it in good shape and perhaps by being obliged to add any excuses he may have for his previous neglect. But to abuse him and exaggerate the offense by calling him generally worthless and shiftless, even though other grounds existed, might be to take the heart out of him altogether.

20. Natural and artificial punishment. — All these various ways of making real the painful consequences of exceptions reduce themselves to two distinct kinds, natural punishments and artificial punishments. The former refer to those which follow naturally as consequences of the failure, the doctrine of consequences; while the latter, the doctrine of punishment, is applied especially to those imposed by some meddler in the environment. We cannot overlook the wisdom of nature in the larger aspects of her activity, but when it comes to life's detailed adjustments, nature is a bungler. She often rewards us for our misdeeds, as in the mellowing pleasure which lasts through life of some youthful prank. She often punishes us for most praiseworthy toil by an ill-timed storm, and for commendable service by ingratitude or worse. In short, the brutality of nature must now be forestalled and now mitigated by more humane measures which may prove equally effective for good and less productive of harm; but the ineffective measures of nature must be reënforced by the artificial.

It is agreed that the artificial must never be used except in so far as the natural need modification. Nature's way is automatic and reaches deep. Artificial modes are often labored and superficial. Both natural and artificial punishment may be brutal. The teacher, then, must study the consequences of exceptions. If ill-adjusted, his re-

course must be to his own action. That may mean chastisement, forfeiture of privilege, or verbal rebuke, ranging from the level of scathing condemnation to that of mild scolding. No general prescription can be laid down for application in preventing exception beyond this, that great care should be taken not to get associated with the habit any unnecessarily unpleasant feelings, even though they are intended to operate inhibitively. If the sphere of application is so widened as to attach them to the desired reaction, the resulting dissatisfaction will prevent the repetition essential for the formation of the habit. A child whose drawings are uniformly condemned in the hope of goading him to more careful work will never make an artist.

21. **Promoting self-criticism and self-testing.** — In the last point to be mentioned for safeguarding against exceptions, both the initiative of the inhibition and the variation in the situation and the reaction are combined.

6. Promote self-criticism and self-testing in all habit-getting. As an aid in getting visible and concrete facility in motor and in many memoriter habits, active self-criticism and self-testing are invaluable in forestalling exceptions. The "New England conscience" as applied to habit-forming may lead to a poor choice of habits, but it is certain to produce results. This type of mind is well represented by the woman who in the excitement of the occasion pronounced her friend's new baby beautiful. After reflecting at home about it, she decided that she had told a lie and accordingly wrote a note apologizing for her untruthfulness. Such habits of self-searching certainly tend to produce a habit of truth-telling, whatever may be the endowment of common sense needed to accompany such extraordinary development of conscience.

The child who is easily satisfied with the results of his labors as well as his way of getting them is in danger of

doing slovenly work. His lessons and his exercises will be quite differently done if he tests himself with such questions as, "Am I getting the slant right?" — "Can I give the names of the first seven Presidents of the United States, or mention all the modes of seed distribution, or the chief industries of St. Paul and Minneapolis?" The child who tests himself on arithmetic combinations, tables, and so forth, as he happens to think of them, is not only fixing habits valuable in themselves, but is besides forming a *habit of fixing his habits* which is most useful in preventing exceptions.

22. Two cautions. (*a*) **Don't nag.** — Two cautions may play a useful part here. 1. Do not nag. It is a great waste of initiative.[1] It cancels incentive fast, and creates a "don't care" spirit. It ignores resulting satisfaction, and emphasizes the monotony of repetition. As a source of initiative and a stimulant to action of the whole-hearted sort, its influence rapidly approaches the zero point. It is as though instinctive protection had been vouchsafed the child against the ignorance of those who do permit themselves to make a habit of this nagging proclivity.

23. (*b*) **Don't expect the child to distinguish automatisms.** — 2. Do not expect the child to understand without being told that an act is to become habitual, but let him know it very definitely. At the same time acquaint him with the automatic nature of a habit. The young boy does not overlook this point when it is applied to outdoor sports. When he tells his associate in baseball to "follow the ball to your hands," he lets him know that that is something he must do every time, until it comes so naturally that he cannot help it, and that he must watch himself and see if he is following the direction. The word "habit" may not be

[1] Compare Bagley, "Class-room Management," p. 166. New York, 1907.

used, but the boy knows what is meant. The same principle applies in the schoolroom, whether or not the word "habit" is used. Some principals and teachers make a point of showing their classes the value of the right sort of habits and how to form them. In the upper grades, some instruction regarding habit is highly desirable.

24. **Summary.** — Exceptions are not merely negative; they are destructive. Their two sources are either weakened initiative or variations in the situation leading to the reaction, or in the reaction itself. These disturbing factors should be removed or reduced to the minimum.

In view of these sources, six general rules have been stated: —

1. Study the habit with a view to all its likely tendencies to modifications.

2. Reënforce by support at the point or time of weakness an initiative which is likely to fade.

3. Remove, if possible, stimuli that menace the habit. (Fatigue is a common menace.)

4. Reduce to the minimum stimuli opposed to the habit.

5. When the habit has reached its maximum efficiency, guard against further variation by special commendation of the reaction.

6. Simplify habits and rid them of special points of difficulty by securing smaller contributing habits before the more complex are attempted.

Aside from these maxims growing out of the nature of initiative and of variations in the situation or reaction, there are certain others which are involved in the child's power directly to inhibit exceptions. This checking tendency or inhibition has its own stimuli, and is the expression of motives which are fundamental to itself. Accordingly, on the side of developing a vigorous inhibitive tendency to safeguard against temptations to lapse, the

following eight points suggest means of preventing exceptions, the first two being suggested by the nature of the stimulus, the next five by the initiative leading to inhibition of exceptions, and the last by a combination of both points of view: —

1. Make plain the fact that certain variations, either in the situation or the reaction, are likely to occur, that they are temptations, and *must* be overcome.

2. Put the pupil on his guard against the *first* tendency to lapse.

3. Prepare for recognition of the danger by leading the child to *resolve* definitely against lapses in general, and particularly of the sort anticipated.

4. Connect by special provision the inhibiting tendency and its motives with the motives at the basis of the initiative for the habit.

5. Supply the child with concrete reminders of the original intent.

6. Picture for the child the painful consequences of failure to acquire the habit.

7. Make real in case of actual lapse the painful experience, and prolong it. The means is by the natural consequences, regulated and adapted, where ill-adjusted, by artificial measures.

8. Promote self-criticism and self-testing in habit-getting.

Two cautions conclude this section: 1. Do not nag. 2. Do not expect the child, without being told, to understand that an act is to become habitual, but let him know it very definitely. At the same time acquaint him with the value and the automatic nature of habit, perhaps by specific instruction on the subject.

CHAPTER XI

How Habits are Broken

"Habits are soon assumed, but when we strive
To strip them off, 'tis being flayed alive."
—Shakespeare.

1. **Misconception of the function of habit.** — The popular notion of a habit used to be that it was something bad that a person either himself got as a result of his evil nature, or had given him, perhaps as a child of wrath, by the devil. The idea of good habits predominating in life as assumed in this book would have seemed strange to a person with such a point of view. On that basis this book is surely all out of proportion; it should have been devoted to an exposition of how to *break* habits, and perhaps only by this time have made ready for the little that need be said on *forming* them. Such a person can hardly have the faintest glimmer of the real function and usefulness of our habits, although he represents in some degree most persons who have had no occasion to think the subject over carefully.

2. **The origin of bad habits.** — On the other hand, the unlettered person is not so far wrong as to where bad habits come from. Many of them are presented to us among our instinctive tendencies. All such tendencies are good when appropriate, and bad when out of place. Other bad habits are acquired as a result of chance, because of some accidental association with pleasure, which was made perhaps early in life, though the act itself may not have been the real, but rather the imagined, cause of satisfaction.

It is said of a certain cat that it had a bad habit of stealing young chickens. The cat had an instinctive tendency to catch and eat small birds. It is a very useful instinct (*i.e.* to the cat) in a primitive state of cat life. In our complex state of civilization, either the cat has to learn to leave chickens alone, or barriers must be interposed between the cat and the chickens. An instinct applied in a direction not agreeable to us, we call a bad habit.

On the other hand, a baby may form the habit of sucking its thumb or curling its hair; a child may form the habit of biting its nails or chewing gum; a man may automatically pull his whiskers, or a woman habitually put a finger up to her cheek. In times of reflection most of us have some little automatism of this sort, usually more or less undesirable, which, according to James, furnishes a sort of outlet for surplus energy. Or in many instances, according to Lauder-Brunton,[1] they actually perform the function of increasing the flow of blood through the carotid artery to the brain, and thus aid in the reflective process, so that greater satisfaction results from the brain processes because of their greater efficiency.

Be that as it may, there are thousands of valuable habits which the child gains through instinctive activity, but especially noteworthy forces are imitation, play, investigation, and self-expression, whatever its forms. Not only do children learn by imitation to copy a large number of actions which they have seen, — most of them useful, others harmless, and others undesirable, — but they also imitate especially sounds, words, and word combinations which they have heard. Some of those words spoken with most emphasis are likely to be no more desirable than the worst of the actions imitated, and for similar reasons, *i.e.* they

[1] See Rowe, "Physical Nature of the Child," p. 106. Also *Popular Science Monthly*, Vol. XLVI., p. 26.

offend our taste, our moral sensibility, or our feeling of what is courteous. They are unfortunate misapplications of a tremendous engine for good in human culture.

3. **Problem of both the home and the school.** — These language habits may be picked up either at home, at school, or on the street. It becomes, therefore, incumbent on both parents and teachers to be on their guard against undesirable ones, as the ease with which they may be removed is proportional to their newness. It is equally necessary that the teacher and parent coöperate in the formation of habits. Otherwise there may be a lack of common purpose sometimes actually forcing the child to make exceptions. Still more important is it in breaking a habit that they work together. Any exception made reopens the old pathway and delays the consummation desired far more than it would if a habit were being formed. The breaking of crude and ungrammatical habits of expression is almost impossible without the backing of the home, and is often unsuccessful for the reason that the home is not of a sort to furnish such aid. There are exceptions, but they are relatively few, where the initiative of a genius has risen above unfavorable surroundings.

4. **Relation between habit-forming and habit-breaking.** — The question may be raised, If the child's actions are at any given moment the product either of his instinctive or habitual tendencies, is not every change made, as in forming a new habit, a breaking up or splitting up of some old one? Surely in one sense it is true that the old outfit of customary ways of performing certain acts is broken in upon, but the new adjustment required may be in response to a new sort of situation, and consequently there is not and has not been any habit of dealing with this situation. An adjustment of some sort is

made, and will, if repeated often enough, become habitual. If the same situation — for example, one involving reproof — has been reacted to for a period perhaps by sulking, and later habitually by a cheerful and well-intentioned promise to do better next time, evidently an old habit has been replaced by a new one.

On the other hand, is not all habit-breaking habit-forming?[1] There are numerous paths or ways of doing things. One may be substituted at one time and another at another. So that whereas one had only one habit for a given situation, he now has a large number, just as a person in a situation where an affirmation is desired, instead of saying "yes," may reply "certainly,"

[1] Professor Horne, in his "Psychological Principles of Education" (Macmillan, 1907), tries to make the same rules serve for both habit-breaking and habit-forming, but is forced to differentiate. Curtmann refers to habit-breaking (*Abgewöhnung*) as reversed habit-forming, but makes a general distinction in a passage which may be translated as follows: —

"The procedure in this afflicted condition of the pupil is distinguished from the unfolding of unsullied powers by the fact that the child has become older when the treatment is begun, that milder measures are no longer effective to the same degree, and further that the confidence and the love, which in general may be taken for granted in the merely unfolding processes of education, can in this sort of process be gained at first in many cases only by the exercise of considerable skill in order to avoid any estrangement of the pupil from his teacher. Habits become endeared to us, and therefore all habit-breaking is hard. Habit-breaking is not a step forward in a chosen direction, but rather a backward step, and consequently lacking in the joy of success. It presupposes regret. Unless the child acknowledges his mistake, habit-breaking is doubly difficult." See Curtmann's "Lehrbuch der Erziehung," p. 140. Heidelberg, 1846.

In spite of the relatively much greater complexity of the task of breaking a habit, good practice will be afforded the careful reader in applying the principles set forth in the previous chapters to this one.

"please," "thank you, yes," "if you please," "pray do," "you bet," "I should like to very much," "just as you say," or use any other expression that may suggest itself as appropriate, each as is evident with a certain fitness based on habit for certain occasions and unfitness for others, but still taking the place of a simple "yes." Even with this wide choice, however, it might be as true to the facts to say that the child really has now twenty habits where he formerly had only one. If he makes a judicious selection, he has surely broken the habit of answering merely with an unresponsive "yes."

In other cases the removal of the stimuli or the crowding of other impressions so as to absorb all attention, causes the habit to disappear or to be "outgrown" without any definite substitution of another.

It is evident that some, but not all, habit-forming is habit-breaking, and that some, but not all, habit-breaking is habit-forming. But the tendency is to supplant a habit too simple for the complexities of life with one or more better adapted to the manifoldness of experience. The natural way to break a habit is therefore to form a counter habit.

5. Nature's way of breaking habits. — The havoc that would be wrought in all progress, were the forces of habituation supreme, has been well illustrated by the conservatism of the Chinese. Nature has equipped man with a contrary impulse to change, to originate, to imagine constructively, — the forces of "accommodation" as opposed to those of "habituation." [1] There is a constant tendency on the part of the child to vary his reaction, to experiment, to accommodate [2] or adjust his reaction more delicately if he

[1] See Baldwin, "Mental Development in the Child and the Race," pp. 214–219 and 476–480. Macmillan, 1903.

[2] See p. 53. Also p. 183.

can. It often happens that he does vary the action without knowing it, and that the variation is a perversion of the original purpose and intent. The function of this fundamental tendency is undoubtedly to secure an economy of the energy and effort used; and, in case equally good results occur, a sort of short circuiting of a part of the path takes place with resultant reduction in resistance. The reduction in resistance may, however, be at the expense of the delicacy of the original adjustment.

6. Habits formed unconsciously. — All habits that have been formed without any consciousness or intent, by unnoticed variations are to be distinguished from those which are consciously formed, these last being either so intricate, so remote from the more usual ways of reacting, or so dependent on effort as to make it quite easy to make an exception in their case, whereas those that have crept into our lives without our knowing it are hard to change, because the attention must in some way be brought to them in the process. Added associations, however, make possible a variation both in attention and in the reaction.

7. The necessity for confidence of success. — Habits vary greatly in the difficulty both of making and breaking them. Those that have woven themselves into the warp and woof of our lives without consciousness or effort on our part tend to persist. Habits which produce a morbid craving of the nervous system are hard to break. But with the true perversity of nature, those that cost us trouble and effort to form are easily broken.

The child must not be discouraged by failure. When an attempt is made to break a habit, err on the side of overdoing rather than that of underdoing the effort. As Curtmann [1] has indicated, many habits necessitate an

[1] See footnote, p. 203.

intimate trust and confidence of the child in his teacher, if the teacher is to know all that is necessary to enable the child to rally all his forces to the destruction of his enemy.

8. The situation to be met in habit-breaking. — Given a habit that is hard to change, what is the situation in its various elements? There is, as always, a stimulation and a reaction. These two factors may be evident and easily recognized, or they may be, as in all such habits as are not characterized by visible muscular reaction, entirely mental, and to be judged rather by interpreting their results and the person's own introspection than by any definitely visible sign.

Curtmann[1] gives as his chief rule for breaking a habit: Withhold all nourishment from the undesirable tendency ("man entziehe der fehlerhaften Kraft alle Nahrung"), adding that it is even wrong to recall it; rather should the thoughts be recalled from it, the associations leading to it should be interrupted and broken, even at the expense of progress in other directions. It must be agreed with him that in breaking a habit with known stimulus and known reaction, the best way, if possible, is to intercept the stimulus.

9. The removal of stimuli. — If all stimuli of a certain sort are cut off, it is evident that the corresponding reactions will likewise fail to function. As long as a baby persists in throwing out of his carriage to the floor whatever is given him to look at, we do not insist on his handling our valuable bric-a-brac. We remove that sort of stimulus. In popular language, he will outgrow the trait. Niemeyer[2] said: "Evil habits are forgotten by disuse.

[1] Curtmann, "Lehrbuch der Erziehung," p. 141. Heidelberg, 1846.

[2] Quoted in Radestock's "Habits in Education," p. 5. Trans. by Caspari. Boston, 1886.

The more rarely evil traits have an opportunity of appearing, the more the causes are removed by which they are excited, the more they will lose in strength, as physical powers relax when exercised."

But a child cannot be expected to live all its life without handling delicate and easily broken objects; sooner or later it must learn habits of careful manipulation of breakable objects. That is, it is sometimes impossible, and often inadvisable, to remove stimuli; the unsatisfactory habits must be modified or adjusted to more complex demands.

In almost all habits, if the stimulus cannot be removed, it will be found that the reaction in itself is not so bad, but, on the other hand, some phases of the act are ill-adjusted to the complexities of life. The child has adapted himself to some situation directly, while mankind has found that different reactions are advisable according as various elements in similar situations are emphasized.

10. The interruption of the reaction. — The most radical form of modification of a previous habit is its absolute obliteration. This is effected aside from the removal of stimuli only through a long course of neglect, and this neglect will only be realized by continued and vigorous acts of inhibition for which, as they are to become habitual, the devices of method set forth in the previous chapters are applicable. Where the breaking of the habit is not nullification (it is impossible to get up much enthusiasm over mere paralysis), whatever modification is made must be of the sort originally described in connection with instinct,[1] either a selection or a combination. The movement of the lips while reading is eventually stopped, the other habits involved in reading being

[1] See p. 81.

selected, while in playing on the piano the habit of using both hands more or less independently is broken by a rhythmic combination of the habits involved in movement of each hand separately. With these also must be combined the habits of interpreting the printed symbols.

11. **Selection and combination.** — This selection involves decided inhibition, as in the former case, where an unimportant phase of the total habit is dropped. The action may therefore be described from either of its two points of view. It is either breaking a habit of moving the lips while reading, or forming the habit of reading without moving the lips. Whichever name it is given, there is distinct inhibition involved in the control of the lips, as many can remember in their own experience and as the ways of breaking this habit indicate. But in other cases, as in breaking a habitual laziness, a number of habits are broken and the selection is the essential habit of studying one's physical need of rest or recreation and that of keeping at hand enough sorts of useful activity to reward effort. The selection in this case is hardly of habits to be broken, *i.e.* the selection involved in inhibitive processes consists really of actions to be made habitual. It is breaking one habit by forming another.[1]

The breaking of habit by combinations, as in the case of the baby's giving up the habit of indiscriminately throwing objects to the ground, is almost never pure inhibition. If it were, it would mean a waste of opportunity. The baby ultimately learns that very few things should be so treated; these are to be put in one place, others in another; these are to be used in such and such ways, and others serve other purposes. In short, a temporary habit of pausing is followed by another of specific action.

[1] See Sherrington, "Integrative Action of the Nervous System" (Scribner, 1906), for examples of the positive nature of inhibition.

Whether or no this pause represents *predominantly* inhibition, as it may, there can be no doubt that it leads to deliberative analysis of the situation with the anticipated consequences of certain possible lines of action and habitual reactions, according to the results of the analysis. The habit of throwing things to the ground indiscriminately is broken, and habits of discrimination take its place. Again, a more involved habit, or company of habits, has taken the place of a former mode of action.

In more complicated instances the selection and combination may operate together in breaking a habit. In learning to read correctly words involving the French "u," the child must add that sound to others suggested by the letter "u." Though he may pronounce the vowel correctly by itself, he must be able to use the sound not merely in combination with others; but in any combination his reading or speech may suggest, this sound is to be called up habitually wherever the word is French, and *not* where it is English. He must break up, in other words, his habit of pronouncing "u" always as in English, and add another possibility to be associated with French words whether they are interspersed in the English or are found in French context.

12. **Bad habits as lines of least resistance.** — The habitual reaction in question may serve some useful purpose. It may save time, energy, simplify movements, make them more accurate, give them stability, reduce fatigue and conscious attention, or minimize feeling, and in general it leaves the mind free for more complicated functioning.

A habit serves as a line of least resistance, and hence, as Professor Horne has already pointed out, it is much harder to break an old habit than to form a new one, since the old association path is there with its tendency

ready to be set in operation as soon as it is once traversed again, or wherever there is hesitation or obstruction of the newer habit path.

13. **Substitute habits must have offsetting advantages.** — If the old habit saves time, and yet is to be broken, this saving must be offset by crudities in other respects; or it is possible that the gain is more apparent than real. Consequently another habit may be equally effective as a time-saver, and more desirable otherwise. In a similar way, the energy saved, the fatigue reduced, the simplification, or the increase in accuracy of movement, though useful in themselves, may be at the expense of real efficiency, everything considered. The advantages may be only apparent, or this habit may take the place of some other which could accomplish all the purposes of this one, and more. If these habits are to be broken, the new and substituted habit must have either the real advantage of the old or some advantage of greater importance which the old one did not have. This principle is certainly one of the most important for consideration in the substitution of habits. Equally important is it that the child know and realize as fully as possible the advantage of the habit to be substituted.

14. **Inherent difficulties must be overcome.** — On the other hand, the loss of feeling, the lack of consciousness of the reaction, the stability or fixed character, and the automatic operation of the habit are distinct obstructions to both inhibitions and modifications of the habit. Many a man gets a well-nigh incurable stoop in his shoulders almost before he is aware of it. He does not feel the change, he pays no attention to the reaction, and tends rather to add to than to lessen the fault. Given a certain train of thought, and the stoop comes of itself. How is such a tendency to be resisted? Feeling must be

gained. He must straighten himself up and throw out his chest and notice how different he feels. He gets his friends to remind him, whenever they see him drooping. The attention must be again focused on the carriage of the shoulders. Many lines of association must be connected with the reaction, especially at such times as he feels himself likely to yield to the temptation, as perhaps on his way home from work. He may think of various stores or street corners he is to pass on his way home and give them associations with throwing his chest forward. Whenever he meets a person he knows, or a man wearing the sort of hat he does, he is to do the same thing. These are all devices for making associations which may serve to remind him. Others may be used for making him generally conscious of himself. Unless he can in some way get the feeling of the reaction or the definite consciousness of the reaction, there is almost no hope of improvement, since the difficulties raised by the stability and automatic character of habit are otherwise unassailable.

Looked at from the broadest point of view, two general conclusions, drawn from the discussion so far, are considerations of the utmost service in habit-breaking.

15. Attack one bad habit at a time. — If, as has been shown, it is hard to focus consciousness on the habit, and if the feeling element is practically lost, it is evident that consciousness must be taken up as fully as practicable with the schemes for working against this *one* habit to be broken. Consequently, in breaking a habit not too much should be attempted at once. "One at a time" is as much as can be accomplished, unless they are all closely associated or of the easier type. In a habit like that of using intoxicants, the attack may be made on the whole list of stimulating beverages, and should extend to

the habit of visiting all places where the temptation to drink is likely to arise.

16. Substitute another habit. — As has already been pointed out, where it is possible and the stimuli cannot be removed, substitute another habit. Unless some other channel of activity is found for the energy which is called for by the given situation, the stress on the old channel to release the tension is very strong. Besides, it is impossible to get very enthusiastic over the stoppage of action. No initiative can be called upon to advantage, and there is no focus for attention except the old line of activity, which gives that an added point of advantage. Consequently an undesirable habit should be supplanted by a desirable one.

Thus even stutterers who have for a long time persisted in the habit are often cured by substituting another habit, such as snapping the fingers for the habit of repeating the sounds. So much energy is consumed in performing this new act immediately upon any hesitancy in speech, that there is none left for the stuttering.

17. Undesirable habits should not be formed. — It must not be argued from this case that the child should develop at the cost of considerable effort undesirable habits as makeshifts, which are in their turn to be broken later. Its justification in the case of the stuttering is the physiological surcharge of nervous energy which must be, so to speak, drained through another channel. The formation of one habit only to be replaced by another, *i.e.* broken, results almost always in tremendous waste.[1]

[1] Compare President Eliot's statement that "a method of discipline which must be inevitably abandoned as a child grows up, was not the most expedient at the early age, for the reason that

One of the deep-seated habits or attitudes of mind the teacher wishes his pupils to have is absolute confidence in his leadership, — a confidence which should be based on sympathy and success. Children are usually more or less predisposed in this direction. If this advantage is lost, as it is likely to be where mistakes are made or wastes of time or labor are discovered, the teacher has forfeited one great source of initiative with his pupils, and one which should be habitually given — unknowingly and all the better for that. In religious education parents often err grievously by pretending to believe what they do not, or at least have serious doubts about, if they are honest with themselves. Later the child discovers the emptiness of the pretense, and thereafter even the genuine convictions of the parents may, much to their astonishment and disappointment, receive scant recognition.

18. **The possibilities.** — In habit-breaking we have then the difficulty not only of the original situation with its undesirable stimuli, but of an established pathway of discharge with its many associations ready to function, if there is the least hesitancy or blockade either in the inhibitory process or in the path intended as a substitute.

Hence reliance must be placed on developing a counter initiative, on practice, and especially on the means of preventing exceptions.

Accordingly, not only is a preliminary study of the situation as outlined in Chapter VII necessary (though here the study should include also a search for the most available line of habit to substitute), but it is necessary as well to study in all its bearing from stimuli to reaction the new habit selected.

in education the development and training of motives should be consecutive and progressive, not broken and disjointed." Eliot, "Educational Reform," p. 328. New York, 1898.

19. Emphasis on preventing exceptions. — The chapters on getting initiative and practice are equally pertinent here in every phase, including especially the earnest conviction of the child that it will be well worth while, but the chapter on methods of preventing exceptions is much more vital when a habit is to be broken, since it will take no more than one or two lapses to reëstablish even in more than its original strength the undesirable habit. The discouragement of failure alone is deadly to the initiative. Besides, resources have been drawn upon and used up so that new motives must be sought and added to the old, if they can be patched up into serviceable condition at all.

In so far as new habits are substituted for old ones, the breaking of habit is only a phase of creating a new one, — a phase in which the opposing stimuli and the reaction are known to exist, consequently emphasizing the importance of preventing exceptions.

20. Relation of breaking habits to the methodology of forming them. — It is almost impossible in the great multiplicity of habits to be broken to fix any of the points of emphasis except in the most general way. It is evident, however, that aside from the guarding against exceptions, the development either of habits of inhibition or positive opposing habits must be built on a *counter initiative.* Certain phases of that will need especial attention. A phase, too, of the reaction, the slight *variation* which in forming a habit is important only as a tendency to be guarded against, is here emphasized, because it lends material aid in shifting or substituting reactions. This will be touched upon briefly in connection with practice which, in the case of breaking habits, is given a quite different weight. For, although practice ordinarily implies stimuli promoting repetition, it is hardly

sensible to multiply undesirable stimuli just for the sake of securing practice in inhibiting. Even a habit should not be practiced without great care as to the conditions, if its desirability is chiefly as a substitute. Aside from this difference in the practice, then, first the use of the counter initiative, and second the use of variations, chiefly distinguish habit-breaking from habit-forming.

21. **Initiative for breaking habits. Positive initiative.** — Only one new suggestion need be made here for getting substitute habits. As before, develop positive initiative, but do not forget to add as well the initiative which is fundamental to the inhibition of the habit. The positive sources of initiative will be, as in all cases, the emotions, the interests, the instincts, resulting or anticipated satisfactions, and the more involved specific motives. They can be counted upon to function, and must be called upon vigorously.

22. **Special incentives to inhibition. Negative initiative.** — In getting inhibition, the source of initiative may be any of the preceding, but those which nature seems to have intrusted with the strongest immediate checking tendency, even to the point of deadening action, are the avoidance of pain, avoidance of danger, fear, and resulting or anticipated dissatisfaction. Some, if not most of these, may be made use of or amalgamated with more positive initiative, not only in their special function, developing inhibition itself, but also in developing a new habit. The hesitation gives opportunity for deliberation, and the analysis of the situation is sure to suggest the habit desired and the initiative with which it is linked. Thus, if a child was accustomed to picking his teeth with a pin, to break the habit, one might inhibit the action by showing him the danger of injuring his teeth, the pain and trouble that he would bring upon himself. His action

might be checked, but the unpleasant stimuli wedged between his teeth are calling for action. If another habit, *i.e.* a modification of this one, such as substituting a wooden toothpick for the pin, is not suggested, there will almost certainly be exceptions made on account of the continuous stimulation. This new plan may be imitated, commended, or otherwise given an associated satisfaction which will more strongly energize it than could the more remote impulse to inhibit without such reënforcement.[1]

There are situations where no habitual act may take the place of the habit broken. In such there is less chance to break the habit. But scarcely any situation is of a sort to exclude habits of centering attention on other stimuli than those provocative of the undesired reaction, and the purposed shift of attention becomes in itself a substituted habit.

23. **The double use of initiative.** — Although the same sources of initiative as in habit-forming may serve in inhibition, there is evidently a shifting of emphasis. The instincts of imitation, play, construction, ownership, and love of the beautiful, for example, could never mean much in the purely inhibitive aspect of breaking a habit, however useful they may be in forming one.[2] When a child stops saying "ain't it," he has nothing to imitate as a substitute, unless we suggest the habit of saying "isn't it." Play and construction are not very useful when really something is not to be done. On the other hand, pride and love of approval may be useful; so sympathy, love of the right, may combine powerfully with the mainstays of inhibition, avoidance of pain and danger, fear, shyness, and resulting or anticipated dissatisfaction. Even emulation or pugnacity may be turned to account by a

[1] See pages 145 and 146. [2] See Section 11 of this chapter.

personification of the habit, in which the child is encouraged not to let it get the best of him.

Similarly, among the emotions the positive should be reënforced by those opposite emotions which will be called into action with any exception to the habit. To the feeling of self-approval at success in the direction of the new habit should be added the anticipated disappointment at failure in breaking the old. Indeed, this feeling should theoretically be so strong as to make it impossible really to conceive the failure as a possibility.

In the case of interest, it is hardly to be expected that a child will have a strong interest in the discontinuance of an act. It will at best be a borrowed interest. Some line of action in which he is interested will be furthered by abstaining from this one. If a substituted habit may be connected with direct interest, then the borrowed interest will easily serve in inhibiting the habit to be broken. A child may have the habit of asking unceremoniously for favors. If they are not granted on such occasions, the interest (*i.e.* the pleasurable activity, design, or plan), which they would have served, suffers. On the other hand, if in addition when he says "*please*," his plans are furthered, the interest in the habit of saying "please" is more nearly direct and combines with the indirect or borrowed interest for abandoning the impolite form of demand.

The same illustration shows the difference in the application of the resulting or anticipated satisfaction or dissatisfaction. Dissatisfaction in connection with any action must be the real initiative for inhibition. When we try an experiment and get unsatisfactory results, we do not often try that same reaction again. Dissatisfaction is not a very inspiring sort of incentive. If, however, in addition to the unpleasantness which has been associated with the habit to be broken, distinct satis-

faction has been associated with a counter substituted habit, the breaking of the old habit is assured.

The depressing effect of motives tinged with self-indulgence, love of ease, low standards, or pessimism, although they are available to a limited degree in forming habits, renders them practically useless as a basis for the effort necessary for the breaking of habit. On the other hand the inspiration of noble example, of lofty ideals, worthy principles, and high standards not only lends powerful support to inhibiting undesirable impulses, but directly serves and promotes the readiness to put forth effort which is indispensable both to breaking the old and forming a new habit.

24. Will power as initiative. — Many a strong-willed person has wondered why the author has not long ere this used the following receipt for breaking a habit, — "Just make up your mind that you will do whatever you start out to do." The answer is simply that it is included naturally among the motives, and is therefore brought in under them here. Moreover, it is one of the most powerful motives to him for whom it is a motive at all; but, on the other hand, those who have the most habits to break are often just those to whom such motives are strangers. In children there is often an almost instinctive persistence which some parents and teachers seek foolishly to overcome, describing their action as "breaking the child's will," — words which fly danger-signals even in themselves. To break a child's will in the sense of crossing him unreasonably and needlessly is to rob him of one of the most powerful factors not only in habit-forming and habit-breaking, but also for success in life. If a child's purpose is wrong and must be thwarted, if he either cannot comprehend the reasoning against it, or there is no time for explanations in the crisis of the

moment, the child may be overruled for his own good or even the good of others; but his will, his optimistic persistence in expenditure of effort and in overcoming of obstacles, should never be held up as a direct object of attack, as though it were tainted in itself and needed surgical treatment.

25. The association of initiative with the stimuli. — Does the fact that in habit-breaking the stimuli and the reaction are both given *in potentia* make any difference in the application of the initiative? Unquestionably it does. The initiative in habit-forming must often even furnish the stimuli as well as the reaction itself. Here, then, is one point of advantage in habit-breaking. To the given stimulus by direct and indirect paths of association may be attached initiative of many sorts. If upon this stimulus are centered dozens of suggestions for inhibition, and one well-developed channel for release of the neural activity, the habit can scarcely persist. A child who wiped her hands on her dress should be made to think of the way it looked when it was spoiled, of the grieved looks and reproving words she received, of the party or picnic she couldn't go to because her dress was spoiled, and so forth. But all these must be called up not so much by the dress as by the wet and sticky hands, so that all these memories with their sorrows may be suggested by those hands acting, when wet or sticky, as stimuli. If, then, it is made easy for her to go and get them washed and this act is provided with its satisfactions, the habit has better chance of persisting.

26. The association of initiative with the reaction. — On the side of the reaction, however, there is a corresponding disadvantage. A certain satisfaction must be attached to the reaction, even though a bad one, or it would never have become habitual. New associations

must be attached to the reaction, then, of such a sort as to counteract that satisfaction and turn it, if possible, into a dissatisfaction. Bad habits of posture are, when formed, at least seemingly more comfortable than the more desirable ones. The various disadvantages and discomforts of the bad postures must, therefore, be brought to the child's consciousness; the discomforts of a good position (if the child is annoyed by them and only on this condition), though minimized as only temporary, must be relieved in whatever ways may be discovered; and the founts of initiative, of imitation, pride, love of approbation, ownership, et cetera, should be turned to fullest account for the new habit.

27. Initiative and inhibition as related to the reaction. — It is in connection with the reaction, especially, that the double use of initiative applies. Aside from this counteracting of initiative already associated with the reaction to be overcome, which has just been pointed out, the various sources of initiative may be called upon both for inhibition of the opposed reaction, or in furtherance of the opposing habit much as in any situation involving habit-forming merely.[1] Dissatisfaction may counteract incentive to the habitual act, while associated satisfaction of one sort or another may further that which is to take the place of the habit to be broken.

28. Practice and habit-breaking. — It may not be evident how practice may be applied to the new cessation of an habitual action. Supposing that the stimuli, both physical and mental, are cut off, it is evident that there will be no practice or need of it. Unfortunately, however, it is often, as has been already shown, either impossible or undesirable to remove the stimuli; consequently, there will be opportunity for practice either in inhibiting

[1] See Chap. VIII.

the old or in the development of a new habit. But, whereas in habit-forming opportunities should be sought for practicing, on the contrary in breaking a habit not only should the stimuli be obstructed, but, as far as possible, every suggestion of the habit should be removed. This is a fundamental difference which admits of no exceptions, unless the substitute habit is worthy of formation for itself alone, and is reasonably certain of successful consummation.

29. **The obstruction and counteracting of stimuli.** — To accomplish the obstruction of the stimuli and all sources of suggestion, it is evident that the child's mind must be thoroughly occupied with other interests. This is particularly true of such times and places as might in themselves suggest the habits, were the mind free to concern itself with those suggestions. Indeed, it is often desirable to change completely the environment. This is the only sensible reason for placing a too communicative or playful boy in the midst of girls whose attention will not be distracted by him, though usually this change of seat is made only as a punishment and the boy does not stay there long enough to assist him in really getting his mind down to his work habitually. The emphasis must be here, as in almost all cases of habit-breaking, on the attempt to counteract the stimuli provoking the habit to be broken, and on making the practice in resisting the allurements of these stimuli actual in every case where the stimuli succeed in attracting attention. No opportunities for practice of the inhibiting habit should be sought. It is unwise for children to play with fire for the sake of practice in keeping out of harm's way.

30. **Importance of variations.** — The second fundamental difference between breaking and developing habits is, as we have seen in the use of the variations, accommoda-

tions, slight adjustments, and so forth, which represent the force opposed to habituation as a development factor. In habit-forming they were important up to the point where the habit was perfected. From that point they became a menace to the adjustment, and one of the principles advocated was calling especial attention to perfected reactions so that they might be repeated exactly at their best. In connection with breaking habits, these variations are to be seized upon. They are not only to be encouraged, but actively suggested in every feasible way.

31. Variations related to the stimulation. — Variations may concern the stimulation or the reaction itself. Those that concern the stimulation are relative either to the initiative or to the source of the stimulation. They may be greatly altered as far as the initiative is concerned by linking with it inhibitory incentives and by presenting broader, but reasonable and clear, points of view. More important, however, is the suggestion offered that the teacher must study the habit, acquaint himself with the stimuli not only at this moment, but all the possible stimuli including those which originally caused the habit and those that are now sufficient to induce the reaction.

These stimuli discovered, they may be so linked with associations and suggestions as to cause a new habit that will replace the old, just as a child may have such associations centered about the sex function that instead of a habit of thinking crudely and irreverently in that connection, he may think both reverently and even scientifically, as soon as his knowledge of biology is sufficiently extended.

It is easy for a boy or girl to fall into habits of being lazy, shiftless, unsystematic, or silly. Many a child has kept a careless habit of this sort long enough to rob him of all possibility of attaining what would have been easily within his grasp, if only in the situations characterized by

such reactions the abundant and compelling associations which are within easy reach had been brought to focus.

32. **Variations in the reaction.**— Although the provocatives themselves of the habit must be surrounded with initiative, and this in itself constitutes a variation, it is particularly of the variations in the reaction itself and the associations which go with it that help is gained. The difficulty presented by the lack of feeling and of conscious attention has already been described. Here is the only opportunity for overcoming that difficulty. Variations must be made in the reaction. This evidently applies to habits so established, that they will persist in spite of a strong opposing initiative simply because there is no consciousness of the act as taking place.

Such a habit is illustrated by the case of a boy who injured his hip so badly that for a long time it hurt him to walk and caused him to develop a habit of limping, which persisted long after all soreness had disappeared. But how could he be taught to walk without limping when he knew neither that he was limping nor what he did with one leg that was different from what he did with the other? He must be made conscious of the difference by walking before a mirror or by being imitated. He must practice the part of the swing or recovery from the swing with that leg until he gets a more direct movement. He must get the feeling of the correct gait as compared with the feeling of his faulty one. The muscles which play a part in the false movement may be indicated, or the time of its beginning may be told or shown him. In other words, every encouragement is given him to vary the reaction by rousing the feeling, directing his attention again to the detail of his movement, and suggesting variations, the whole reaction being surrounded with associations tending to produce one or all of these three results.

33. Natural *versus* artificial variations. — The sources of variation may be natural, and such are to be promoted; but it may be impossible to discover them or dangerous to wait. In such cases recourse must be had, as in general, to the artificial variations it is possible to induce. These are of three kinds — addition to the reaction, omission of elements, or complication. Language habits will illustrate most briefly each of these. The omission of "e" in pronouncing eleven "leven" must be righted by addition of the first syllable to the habit; the pronunciation of the word, "often" with the "t" sounded, must be amended by omission of the "t"; and many who pronounce the last syllable of literature "toor," should substitute for this a pronunciation by analogy with picture and fixture, thus both subtracting and adding to the previous reaction for that word.

All of these are the simplest cases of what may be extremely intricate processes. Nor do I believe that the more intricate applications are any less practicable than the simpler ones. All depends on the clearness with which the teacher or parent sees the need.

34. Dangers of injurious variations. — Whatever modification or variation is made in the reaction should not be selected at random. It is possible that the variation made may be worse than the habit. A child may have formed an undesirable but relatively harmless habit. If he is taken to task too severely, he may be driven to a habit of secretiveness or concealment much less desirable than the original habit.

35. Preventing lapses *into* the old habit. — It is well-nigh impossible to select points for emphasis from the chapter on preventing exceptions as applied to breaking habits, except as has already been done in connection with the removal and reduction of stimuli and the use of variations. Otherwise, the whole chapter applies. It need

only be borne in mind that the stimuli to be removed or reduced are those of the undesirable habit itself, while undesirable habits are both to be varied and complicated.

Whereas the inhibitive tendency in preventing exceptions in forming habits is to avoid lapses *from* the habit, in thinking of it from the standpoint of this chapter it is to avoid lapses *into* the habit. With these precautions in mind, its application is reasonably plain.

In one respect there is less danger here in the use of punishment. If the old habit is made responsible for trouble, it will be all the more in disfavor, and consequently more likely to be overcome. There is with fit precaution no such danger that unpleasant associations may attach to the new substitute habit, as there is when habits are to be formed rather than broken. The only dangers are here, as in all punishments, those of discouragement and of loss in frank and open good feeling.

36. Need of nice judgment and study of individual cases. — In spite of the length to which this discussion of the points of emphasis in the preceding chapters as applied to the overcoming of habits has of necessity been continued, the writer feels that the complication of the problem must baffle any attempt to meet it in advance. Consequently, much nice judgment on the part of the teacher or parent is necessary in any individual case. All the intricate possibilities have not been, and could not be, considered, and only main lines of consideration have been attempted.

37. Application to a concrete case. — For the rest no better expedient can well be adopted than to take the various points in the chapter and apply them to a concrete case in a way that may seem formal to some, but has been chosen chiefly for the reason that it enables the reader to discover without effort the applicability of the series of points or principles established.

38. (*a*) The study and demonstration of a concrete habit. — To take, for example, a boy's habit of shuffling his feet as he walks, it may seem easily remedied to one who has not dealt with groups of children. It is, however, one of those habits gained unconsciously, and is often exceedingly difficult to break. In the teacher's preliminary consideration (following rather closely the suggestions of Chapter VII), it is easy to see that a new habit is to be taught, since any modification of a customary mode of walking must be automatic, be serial, and bear in its complete form all the marks needed for identification. A counter habit is to be substituted and all effort concentrated in that direction. The shuffling gait is to be replaced by one which is straightforward, brisk, and businesslike. This cannot be taught in one lesson. It implies a series of lessons in forming a habit. Ideas are involved only as they contribute to the formation of this substitute habit.

In this instance application of the principle that the teacher must study the habit in detail, and try it himself, leads to that which is too self-evident to serve as illustration. The teacher knows what good carriage involves, and can readily discover the boy's main faults. Attention may then be directed to them whether they concern the head, shoulders, body, and legs and feet.

1. In giving the child an idea of the way in which he is to walk, the first essential is an actual concrete demonstration by the teacher of the special points to which attention should be called. Besides this, the boy may be on the lookout for examples of manly bearing, which please him, and for illustrations of what he has been shown by the teacher. If necessary, some of the other children may help by marching and so furnish a basis for pointing out essentials, though care must be taken that such help is given tactfully and sympathetically.

2. Ask him to describe the marching of soldiers, or the bearing of persons of good carriage.

3. Let him practice the stepping forward, making sure that he keeps his leg straight at the knee until it is time to bend it at the beginning of the next step.

4. Have him demonstrate his understanding of what is meant. He may hold his stomach too far forward or incline from side to side with a slight rolling motion. The task must consist of demonstration on the teacher's part and experimentation on the part of the child under the kindly criticism of the teacher, with liberal praise for success, even before much success is won.

The sort of variation included here must consist of both additions and subtractions. The bend of the knee must be delayed; the back must be straightened; the throwing forward of the stomach must be omitted. The needed variations would be a long time developing naturally, or automatically, and consequently must be made as a result of the teacher's or parent's foresight and planning.

39. (*b*) **The calling up of the initiative.** — Before this undoubtedly the initiative (as suggested by Chapter VIII) should have been called into action. Initiative is considered separately here, so that each chapter may have its own distinct contribution to this specific problem. Of the list mentioned, though almost any of them could in some phase be made to serve, the following suggest themselves to the writer as most applicable: imitation, play, love, sympathy, sociability, the expressive instinct, ambition, emulation, rivalry, pride, independence, courage, and pugnacity. All of these in different ways challenge his stamina, his ability to conquer. They are all positive, favoring the new habit. To them should be added the inhibiting initiatives, such as his disgust at himself for falling into such a habit, dislike for the slouchy acts of slouchy

people, the pitying remarks of the sympathetic, the ridicule of the unsympathetic, the losses that may come to him, and so forth.

Most of the above are so nearly akin to egoistic and social emotion that little additional help may be gained from those forms of feeling, but intellectual emotion may be appealed to if the child can discover for himself any helps in correcting his fault or further instances of good carriage. The idea of grace and harmonious adaptation of effort to accomplishment may be suggested by the æsthetic emotion, while even the moral emotion raises the question whether it is right for him to announce himself by his way of walking as a careless, slovenly boy. And, on the reverse side, his dislike of appearing awkward and clumsy or of being disapproved, may help.

His interest in individuals will lead him to many comparisons, and if he can see well-drilled soldiers, his interest may be extended to groups and lead at his teacher's quiet suggestion to his joining a "boys' brigade" or organizing a small company among the boys of the neighborhood.

Nowhere to a greater degree than in a habit of this sort will the success gained be dependent on the resulting satisfaction which comes through the teacher's recognition and commendation of his effort and of his successes. Various means of heightening this satisfaction may be tried, and should lead all the way from a quiet glance of approval to a public recognition of merit; but ammunition of this sort, as of any other, must not be used up at the beginning of the contest. It is valuable for the very reason that it keeps carrying forward initiative. On the other hand, the teacher's disapproval, withdrawal of privilege, and his unfeigned sorrow at the boy's failure are also valuable as incentives to inhibition.

Other motives which may serve are: manliness; his

thought of how some favorite friend, how some honored character he has read about, would carry himself; or perhaps a general feeling that it pays to do what his teacher and parents favor, whether he sees any real sense in it himself or not. If rewards of some special sort such as the monitorship "of the goldfish bowl," special privileges, and the like, act as powerful motives, they may also be useful as exceptional or extraordinary modes of appeal. The danger is that the child comes to feel in such cases that he is doing a favor to his teacher in getting this habit. Whatever motive is used, it must enlist his effort and persistence. Here is where he is to show his will power. Let him see that all depends on him.

Lastly, to illustrate the necessity of connecting motives and habits, it may be that he is very anxious to gain the favor of some special group of boys or girls, or that he is soon to go to work and wants to make a good impression on his employer. He may never have discovered or thought that his shuffling, slovenly gait would rule him out of favor in either of these directions.

40. (*c*) **The practice of the good carriage.** — Evidently, practice of the good carriage is desirable, and the following points apply: —

1. A specified time for special practice under the eyes of the teacher might be afforded by a marching drill.

2. For practice, a certain distance so often a day may be designated. Perhaps going and coming from school would be a favorable time. The stimuli which come to him from all sides as he walks may be variously associated with the new habit by frequent and diverse means of suggestion.

3. Whenever he sees a person standing or walking particularly erect, he must think that now is the time for him to make a special effort, and any person having a

slovenly gait may also serve by contrast to call to mind his need of practice.

4. Certain corners or certain scenes which he must pass on his way to school may be made to act as reminders. Or let him think of boys he is very likely to meet, and decide to straighten up and do his best when he sees them. These associations will help to promote practice.

5. Put him in positions of responsibility in the school line and elsewhere, so that variations in favor of more briskness of gait and erectness of posture may be suggested.

6. Don't put all of the effort at first on breaking the habit and then forget all about it. In the memorandum of things attempted, make a note of the child's intention and with or without reference to it keep the child practicing from time to time, even after he has made a good beginning.

To make the practice effective, not formal, —

1. Remind him in various ways of the initiative that seemed to appeal to him most.

2. Let him know that he has not succeeded, until he usually walks as he can when trying his best.

3. Let him see that mere desire to get the good habit will not suffice. Only through effort will he gain success.

4. The variations of the reaction suggested by study of the habit must direct attention to many special points in the reaction and very likely to traces of satisfaction which may have associated themselves with his various efforts to improve.

Almost any method must provide for practice, but for the greatest possibility of practice the coöperation of the parents is desirable.

41. (*d*) **Preventing lapses into the shuffling gait.** — From the standpoint of the initiative needed, the lurking pitfalls, and the opposing stimuli, the following points are the applications suggested: —

1. The tendency to revert to the old habit is constant. It may show itself at any of the points at which the preliminary study of the habit revealed weakness.

2. When the child is tired or piqued or disturbed, the teacher may need quietly to reënforce his waning initiative.

3 and 4. The rules for removal and reduction of stimuli opposed to the counter habit hardly apply, because those provocative of the habit to be broken cannot be removed, and can in only some slight degree be reduced. However, the various associations centering on these may be made to aid the new habit greatly, if they suggest sufficient sorts of variation to insure the desired reaction.

5. After sufficient variation has been produced to start the new habit, all tendencies toward the old habit must be guarded against by special warnings. In this case it is difficult to rid the new habit of special points of difficulty in advance. The whole habit of walking forms a unit, and only in exceptional cases could there be some preliminary practice which would be helpful.

More can be accomplished on the side of developing inhibitive tendency.

1. Let the boy understand that any inclination arising later to slip into the old way of walking is a temptation, and must be met with determination and persistence on his part.

2. If, when tired, he begins to show the tendency to lapse, warn him. So on any occasion when conditions vary, put him on his guard without waiting until he has already dropped back into his former gait.

3. Lead him to resolve with conviction not to yield to fatigue, or any other tempting influence to fall back even for the moment into his old habit.

4. If, for example, his ambition is the strongest motive for the new habit, show him how unfitting it would be for a

boy of his spirit and ambition to slump into the old way of walking.

5. A button with the picture of a soldier on it, a keepsake, or a badge may serve as a concrete reminder.

6. Show him how he would suffer if he were condemned always to walk that way; what he would miss in the way of approval, dignity, and respect. Let him compare himself in that event with some undesirable character selected from life or literature.

7. In case of his really falling back, make an ado over it in a sensible, but still for him very embarrassing, way. From time to time a reminder not too unsympathetically given may be useful.

8. Get him to watch himself, to ask himself definite questions which will give him a basis for self-criticism.

These points will suffice to show that the rules for forming a habit are applicable in much of their original form to the problem of breaking one. Of the rules which cover scientifically the problem of breaking a habit, almost all have been found to be available and suggestive in this illustrative case.

Further illustrations of the application of these rules of habit-forming will be found in the next chapter.

42. **Summary.** — The important thing in teaching is to form good habits. Incidentally, those bad habits which have crept into the child's life unbidden are to be removed. They represent bad adjustments. Teachers and parents should coöperate in their removal.

Habit-breaking implies in most cases the formation of counter habits. Nature breaks habits by variation. The hardest habits to break are those of which there is no consciousness. These are brought to consciousness by added associations. The child needs to trust his teacher, and must be protected by him from failure, as that is doubly disastrous, since it reopens the old habit path.

Both the stimuli and the reaction of the habit should be intercepted. Whenever it is at all possible, the stimuli should be removed. Reactions may be inhibited, or they may be modified either by selection or combination, or both.

Counter substituted habits should have offsetting advantages to take the place of the old, while the disadvantage of lack of feeling and conscious attention must be overcome by making new associations with the action.

Attempt should not be made to break too many habits at once in a wave of reform. They will not get the attention needed. To attack one at a time will be much more practicable. The substitution of a counter habit is made necessary because of the need of some outlet for the neural activity. But no habit should be substituted which is not in itself of worth.

Initiative, practice, and preventing lapses are all necessary for breaking as well as forming habits, but with a difference in emphasis at various points, and especially at the point of preventing exceptions.

Positive initiative must be united with the incentives to inhibition. Both sides must be enlisted whether the source of the initiative is instinct, emotion, interest, or the resulting or anticipated satisfactions or dissatisfactions. Persistence will often operate as a powerful initiative, and should not be unreasonably thwarted for the sake of "breaking the will." The stimuli to the habit must be obsessed by numerous associations leading in other directions, while the reaction must be no less beset, and to that especially the double use of the initiative applies.

A fundamental difference regarding practice in breaking habits is that no opportunities are to be sought or created for practice. On the other hand, stimuli must be obstructed or counteracted. The variations, instead of being guarded against as promoting exceptions, are here of assistance in

making associations which will interrupt or supplant the reaction. Even a stimulation may thus draw upon new initiative and suggest other forms of action. But particularly in the reaction, variation admits of associating the feeling quality and the conscious attention needed, while offering abundant suggestions of new lines of action. Variations may be either natural or artificial, and may add, subtract, or combine these processes in their action. These changes are not to be made at random.

The exceptions to be prevented are lapses *into* the old habit. The removal and reduction or obstruction of stimuli, together with the use of variations, apply in preventing lapses, as in practice. Otherwise the directions for preventing lapses in forming habits are equally applicable in breaking them.

Nice judgment is necessary as well as a study of each individual case. The concrete illustration, breaking the habit of walking with a shuffling gait, serves to indicate the applicability of the directions for studying the habit, getting initiative, practicing the inhibition or substituted habit, and for preventing lapses.

CHAPTER XII

Habit-Forming as Involved in School Discipline and Moral Training

"Habit is a cable. Every day we weave a thread until it is so strong we cannot break it." — Horace Mann.

1. The meaning of discipline. — To discipline a person wisely is so to manipulate his environment as to develop in him, without waste of time or effort, valuable habits. No necessary connection either with fear or punishment is implied; for these, as we have seen, are the least effective motives for forming vigorous habits. Popularly, the word "discipline" is used loosely to indicate punishment for infractions of rules, training in habits desirable for the economical management of a school, and for the formation of character, or the sharpening of the wits for intellectual operations. This ambiguity necessitates the limitation of the term by such words as "school," or "moral training," if one is to exclude the habits involved in the acquisition of specific sorts of knowledge rather than those of conduct.

Training is a word also used loosely and signifying the sum-total of preparation for action of a certain sort. As such it includes the development of both ideas and habits, while discipline evidently applies only to an ability to *conduct* one's self thus and so, without regard to whether the understanding is active or not. "Theirs not to reason why. Theirs but to do and die" is the attitude of discipline.

2. Enumeration of important school habits. — Of the habits of first importance because of their assistance in conducting a school economically, and included in those

which it is necessary for a teacher to secure in his pupils, if he is to be called a disciplinarian, are the following: order, obedience, respect, reliability, independence, diligence, accuracy, quickness, carefulness, punctuality, kindness, courtesy, neatness, and erect posture.

Besides these, adding for the sake of completeness those most worthy of emphasis, but contributing rather to scholarship, are: habits of attention, sense discrimination, observation, interpretation, invention, logical memory, comparison, classification, inference, and accurate formulation. The habit of study (or better the habits of study) might be added to these, but it is really made up of many different types of habit — now observation plus inference and accurate formulation (as in nature study or biology), now interpretation plus memory (as in history), inference and formulation (as in mathematics), now observation plus invention (as in physics and mechanics), and the like. Habits of organization would differ similarly in the combinations of habits peculiar to one field of thought as compared with another.

On the side of moral training, the great and important habits by general consent are: positively service, negatively self-control. But each of these implies habits of attention, plus habits of inhibition, plus habits of decision by reference to ideals, *i.e.* on the basis of the best knowledge available, plus finally the habit of putting the decision into immediate execution.

These are all volitional, and with them should be classed habits of putting forth physical and mental effort, habits of making an accurate language record of his thought, and habits of expression, this including habits of expression by word, written or spoken, by gesture, pantomime, dramatic representation, drawing, painting, sculpture, and other forms of manual representation.

3. The complexity of school habits. — It is evident that each of these habits is in itself a grouping or class including large numbers of specific habits. For example, the habit of obedience may be called into play by two teachers and not by the third or by the home. Accuracy in arithmetic, spelling, history, may exist in one subject and not in others, or sometimes even in a section of a subject and not in other parts. Punctuality may be found in connection with business and not in social engagements, or *vice versa*.

Most of these habits disclose as well the involved nature exhibited by the habit of self-control.

Order, for example, is dependent first of all on having *one* definite place for each separate object to be kept in order. The habit of thinking of their place whenever things are found out of it and not in use, is a second essential as a foundation for order. People seem to recognize the out-of-placeness of objects, and this fact underlies the humor of many a joke. So Mr. Dooley's allusion to the buttons in the soup or rope in the potted ham was sure of a hearing, though the workshop of many a cultivated man and the workbasket of many an educated woman are scenes of disorder such as would never be tolerated in a packing house. To this habit of establishing a place for everything of use, and that of recognizing the out-of-placeness of things, should be added the habit of returning to its definite place whatever is not in use.[1]

In the case of the first habit, any unfamiliar or new possession or situation must furnish the stimulus for the equivalent of a series of reactions like the following: "new thing," "where shall I keep it?", "I'll put it here."

[1] Of course this applies more particularly to those objects for which we are responsible. It is not intended to apply to a general searching for such opportunities where others should take the responsibility.

The second habit, that of recognizing the out-of-placeness of things, is valuable, since through it there is not only a stimulation to a certain act, but the emotional unrest acts as an incentive for the third habit, that of returning things to their place. Both of these habits (the second and third) may therefore be considered together. They may be prompted by all sorts of situations. It does not follow that because one stimulus is reacted to promptly that another will be equally moving. Sometimes possessions at school will be neglected and those at home not. Sometimes things of value will be cared for when things much more conspicuous, but of little value, are not. A person may have a place for his pen and pencil, but leave newspapers "all over the place." He may be able to find his hat and umbrella, but not his glasses and his gloves. It follows, then, that there are many habits of keeping things in order and that wide application of the ideas and tendencies at their basis must be made, if one is to develop habits of order.

In general, a study of habits of accuracy, attention, or others of the school discipline class will reveal a similar complexity and dependence on separate specific habits, on certain emotional habits, and more or less consciously accepted ideals of action, these themselves rapidly becoming automatic.

4. **Additional habits involved in moral training.** — It is evident that the detailed application of the fifty or more principles laid down in the preceding chapters must be left to the teacher with the special case and need. Space would not permit any consideration, point by point, of the separate habits involved either in school discipline or in moral training.

In general, all of these habits involved in the economical management of a school are moral in their tendencies. They are *serviceable* in society, as in school. The close

connection was noticed by Aristotle,[1] who included all virtues under the genus, habit.

President Hyde,[2] in his admirable little book on "Practical Ethics," takes a list of more than twenty objective relations maintained by man, and gives the corresponding duty, virtue, reward, temptation, vices of defect and excess, and penalty. The close relation between habit and duty and between habit and virtue is quite strikingly illustrated by the fact that the following habits necessary in addition to those fundamental to the economical conduct of a school for moral training are found in President Hyde's scheme either as duties or virtues. Duty implies habitual performance on the part of her devotees. Virtue is not applied to sporadic or spasmodic plays of good will. It must have the stability characteristic of habit. To complete, then, our list of important moral habits, we add: temperance in eating and drinking, cheerfulness, economy, prudence, clean-mindedness, kindness to animals, justice, devotion, loyalty, patriotism, coöperation, conscientiousness, appreciation of the beauty and marvel of nature, and an optimistic confidence in the Supreme One which will carry with it an habitual tone of responsive, willing service.

The root concept at the basis of all these, as of school discipline, is service. In general we may trace the mode of procedure in all by a consideration of the essentials in the development of habits of service.

5. (*a*) **The development of habits of service.** — In selecting and demonstrating the habit to be formed, any habit included in the realization of service appropriate to the child's age would be worthy of a place. Nor does this exclude the most necessary development of his own

[1] See "Nicomachean Ethics," pp. 41–42. Trans. by Browne. Bohn, 1853.

[2] Hyde, "Practical Ethics." Holt, 1892.

powers, if capacity to serve is to be gained. The recognized need on the part of himself or another for any help or assistance is evidently the stimulation starting the reaction which renders the helpful service or does the necessary deed. The nature of the habit may be made concrete by citing historical or literary instances. Lincoln's trudging miles into the country at the end of his day's work to return to the old lady the few pennies accidentally overcharged, makes concrete the meaning of honesty not merely as an ideal, but as a habit. Instances in the child's own life of joy in the victory of benevolent impulses, and his chagrin and self-condemnation at his weakness in the face of opportunity or temptation, will furnish sufficient illustration of the use of his own experience. He may talk over with his teacher imagined situations, so that the embarrassment and awkwardness of a new plan may be more or less worn off. Then all that is needed is to really put his idea into practice, if possible, still under supervision.

6. (*b*) **The initiative of service.** — In arousing initiative, almost any of our selected list of instincts might do. The most useful would probably be imitation, play, curiosity, sympathy, sociability, expression, ambition, pride, independence, courage, approval, and disapproval. In various combinations they should prove effective in stirring the child to appropriate action.

From the emotional standpoint, the altruistic and æsthetic are in many cases closely associated with the moral. The child's interest in and admiration for various relatives and friends, as well as his regard for characters in stories and history, may be turned to account. However, the most fundamental and important emotional factor in stirring up initiative for moral action is to make pleasant associations with desirable, and un-

pleasant associations with undesirable, forms of reaction. These pleasant or unpleasant associations may be derived from any legitimate source.

The importance of developing motives of the higher order is easily illustrated, if a person of limited education is asked how he would teach a child that it is wrong to lie or steal. Two answers are likely to be given on the average, — "I would teach him first that honesty is the best policy," and secondly, "that he will be sure to be found out." When the average young American learns to organize his experience into ideals and motives, then will the patriotic citizen view with complacency the lack of specific and purposive training in morals and religion. So far we have been indebted to the automatic processes only.[1]

Even in the world of business, in spite of the tendency toward honesty and uprightness inherent in general in business relations, competition has often brought in questionable practices and lowered both ideals and standards, as well as motives. It is no less true in the school life of the child. The hurry and scurry to cram his mind with as many scraps of fact and fable as possible in the minimum amount of time, has led to an almost complete neglect of the development of a wide range of worthy motives. It has been left to chance and the child's automatic processes, with the result that the child's reactions have been just good enough ordinarily to deceive those with his education in charge into thinking that all had been done that was necessary.

The importance of adolescent motives as instanced by an increasing appreciation of responsibility to others can-

[1] The advantage for the child of embodying in some personage, real or imagined, his ideals has previously been noticed. No great religion has been lacking such personages. It is the fundamental error in barring Bible history from the schools.

not be overlooked in this connection. Their value in leading to conversion has been noticed earlier.

7. (*c*) **Practice and habits of service.** — There is no need of making occasions through which habits of service may be developed. The situation or occasion is always there with its direct or indirect opportunity for service. The only need is that the situation be clarified, that the specific habit of service to be applied may be made plain. Some people fail to realize that the highest service they can perform at times is to take some recreative exercise or a nap, and are ashamed of themselves every time they stop working. If attention is focused on a certain specific habit of service, the application of such habits will be simplified. Later other forms of service may become the object of endeavor. With varying degrees of efficiency in each instance, periods may be set for practicing this or that sort of service, the number of repetitions may be specified, favoring conditions and suggesting influences may be brought into play, and occasional exercise will keep up the utility to the maximum. There is hardly any other means of making practice actual rather than formal, except by arousing a serious intent to serve and by pointing out where the most attention is needed, as, for example, when self-interest and service conflict, or seem to conflict.

8. (*d*) **The prevention of exceptions.** — To guard against exceptions, a child should be led to see that services are not merely to be performed, but are to be performed skillfully. Otherwise there will be serious rebuffs, rebukes, or possibly even violence, as well as almost equally disappointing ingratitude. Let him see how he may be prejudiced in favor of himself in various instances. As far as possible these menaces are to be removed; but where they are bound to appear, a ridiculous overdrawing of

cases may serve to add noteworthy associations which will reënforce waning initiative. So, too, the child may be warned against first tendencies or resolve definitely against lapses. The loss of self-respect, as well as the ridiculousness of failure, may supplement the initiatives already mentioned. Concrete reminders of his intention, the painful consequences of lapse whether pictured or realized, and self-criticism should operate in some form with relation to each habit to be included among those classed as habits of service.

9. **Are there general habits?** — Such classes of habits as are included in the list of school habits, and those added as essential in moral training, have been termed "general habits." Perhaps because of their association with the old discredited notion of formal discipline, they have been neglected. It behooves us to consider what chance there is, therefore, that one habit may affect another. The distinction has already been made in Chapter IV that habits correspond to specific neural pathways. In what sense may they be generalized? Bagley has proved the term "formal discipline" to be self-contradictory, and Thorndike, while vigorously assailing a conception of formal discipline which is largely a man of straw, shows better than any one else has done how to get the maximum results in general training out of specific training.

Three points will show the possibilities of benefit from special training beyond the specific line of reaction subjected to practice.

10. **The possibility of common elements.** — 1. The habit pathways may altogether or in part be common to two or to many operations perhaps *externally* very different, just as a habit of writing vertically the letters *b*, *f*, *h*, *k*, would be certain to carry with it the vertical position

for the *l*, as the same initial swing which was found in all the other letters is also found here. So most of the habits of speech and composition taught are available on occasion for application wherever they are common or similar to larger habits or to a larger field of activity.

Professor Thorndike confuses himself by insisting on an *identity* here. He says the advocate of the disciplinary value of composition and language overestimates here; that the ability to speak in language classes is not "identical with the ability to speak to jurymen in a law court, or to persuade voters." He might have added with almost equal appropriateness that such is not identical with the ability to umpire at a baseball game, or to announce trains at a railroad station. It is evident that, in so far as ability to express one's self clearly is gained whether in or out of classes, it will be serviceable *as far as that ability goes* in aiding the lawyer, the politician, the umpire, or the train-caller. We have no warrant for expecting it to go further. Whether the real point is convincingness or argument, or the making of friends or constituents, the judgment of balls and strikes, or power of lung, surely training in English composition is not the only desideratum. It must, however, play its fundamental part wherever there is a place for spoken or written language.

Professor Angell[1] finds this "central factor common" to two mental processes in a "general attitude" involved in attention, later calling attention also to the "very real intellectual advantage" gained as a result of the "leverage given by system and organization."

The factors common to general improvement in logical memory are, according to Professor Pillsbury,[2] summed

[1] See *Educational Review*, Vol. XXXVI., pp. 1–14.

[2] See "Effects of Training on Memory," *Educational Review*, Vol. XXXVI., p. 26.

up in the following: "Habits of attention in general, and to one kind of material, not to another, are undoubtedly acquired through study of any kind. Even the habit of using books intelligently needs to be acquired in the early stages, and, once acquired, can be transferred to other fields. Even more important is the capacity for selecting the important points and in properly knitting them to the related facts, to the facts and occasions that render their recall desirable. For most adult learning it is essential to remember the fact apart from the language in which it is expressed and apart from the particular connections in which it is first learned." [1]

11. **The possibility of a common method of procedure.** — 2. The method of procedure in the special habit may evidently be applicable to a much larger field.[2] A card catalogue scheme is a method of keeping information which applies not only to libraries, but to lists of names in schools and other institutions, items of sale or expenditure, and otherwise according to the business or institution where it is found available. It is general in its application. So again a method of investigating and sifting historical records may include getting habits of distinguishing between real and false data, habits of searching for motives, of inference back and forward from data, and habits of organizing material into a consistent system as far as any event is concerned, which cannot but have a very definite application as a *method* to the work of the lawyer in his examination of records

[1] Professor Meiklejohn finds in the logical categories the basis for the factors common to both specific and general training. See "Is Mental Training a Myth?" in *Educational Review*, Vol. XXXVII., pp. 126–141.

[2] Compare for this and the preceding, Thorndike, "Principles of Teaching," pp. 244–245.

of to-day as contrasted with those of yesterday or of many yesterdays. Similarly, but to a less degree, habits of observation as developed by nature study or natural sciences may tend to cultivate the habit of using one's senses even of taste and smell rather than carelessly guessing at the facts and thus naming the new plant or shrub, perhaps incorrectly.

Professor Pillsbury,[1] in reviewing the investigation of Ebert and Meumann,[2] attributes the general increase of accuracy and quickness resulting from special training to "the acquirement of better methods of working, and of a familiarity with the material and processes that makes relatively interesting what at first is probably as uninteresting a task as can easily be imagined." A better method of procedure had been discovered, but in some particular phase it may have been disadvantageous.

A person who plays tennis well with his right hand can easily win playing with his left hand in a contest with a beginner using his right. This fact is accounted for by the advantage furnished by previously formed habits of judging where the ball would strike, of placing himself near enough and not too near to swing freely and get a square shot, and of returning the ball where it would be difficult for his adversary to make a return.

12. The extension of habit by variation and suggestion. — 3. Mental attitudes or ideals tend by chance variation and by suggestion to extend their sphere of action. This accords with the general law of variation so important in the improvement of adjustments. The suggestions may be largely internal, resulting from a lively play of imagination, or they may be predominantly external, and therefore the outcome of imitative activity.

[1] "Effects of Training on Memory," *Educational Review*, Vol. XXXVI., pp. 15 to 27.

[2] "Archiv für die gesammte Psychologie," Vol. IV., p. 1.

The clerk who comes into contact with a man who has system in handling and arranging the details of his office, is, in his desire to please, likely to develop systematic habits himself. These will be applied first to the office duties. But gradually as he appreciates the advantages of knowing just where everything is, and how this or that is to be done, he may become known as a "crank on system," and be ever on the lookout for opportunities to ride this particular hobby, thus developing many habits which he would never have formed, had this ideal or attitude of mind not grown upon him. But it is not essential that this ideal should be so definitely developed. The habit of putting familiar syllables and words together in reading to make sounds corresponding to new words, may not be consciously gained; but having been gained in English, it will be applied to German or Latin or any other language similarly constituted, partly because of the common pathway or method of procedure above referred to, but partly because of the *suggestion* that brings into play other activities, when a new or different situation is given serious consideration. A child may become familiar with the usefulness of a crowbar in moving heavy stones; he may get into a habit of thinking that that is the implement to use for the purpose. If some beam or log is to be moved, it is altogether likely that the habit previously applied only to moving heavy rocks will be extended by suggestion to the problem of moving the log. A careless, unreliable child may be awakened by one teacher into habits of reliability and trustworthiness. These habits tend gradually to extend themselves not only in the child's dealing with other persons, but to ever new fields of responsibility. The child who is diligent in one study which does not appeal to him, is likely to be so in others.

If he is habitually polite to one person or class of persons, suggestion is almost certain to extend the habit. Praise received for the habitual quickness in one kind of work is very likely to inspire to habitual quickness in others for the sake of the approbation anticipated. What was at first a mere habit of working out puzzles may extend itself to invention, to scientific investigation or philosophical speculation, according as the suggestion of different environments varies. The habit of formulating a conclusion in a clear English statement is very likely to suggest an application far beyond the subject in the curriculum or the science which first called it forth.[1]

13. **Other arguments for general habits.** — Aside from these three points in explanation of the general effect of specific training, Dr. Hinsdale[2] claimed that there was by virtue of the exercise of one pathway an "energizing or mobilization" of the mind beyond the immediate channel more particularly involved. While there are facts which support this theory, they are more naturally and specifically accounted for by reference to the three sources of benefit through general training just discussed. Presumably, this energizing is not a transfer of energy into unaccustomed channels, but rather a functioning in a new connection of mental processes ordinarily working in another combination. That is, there is a common element in the pathways involved. A greater readiness in one brings about, therefore, greater readiness in the more or less related reaction.

[1] See Chapter IV. for further illustration. If I have tended to emphasize this point disproportionately, my excuse is that the other two are more obviously and more often found in the literature of formal discipline, while this equally important mode has escaped notice.

[2] "Art of Study." New York, 1900.

Corresponding to the joint improvement possible in similar functioning, Professor Judd has pointed out[1] that there may result a "reciprocal interference" or hindrance in opposed forms of action, just as in vision we are every now and then misled by habits of judging size and shape, or as a habit of "cutting" a ball in tennis extends itself to hitting a golf ball in spite of the disadvantage in so doing. Specializing in any direction implies turning one's back on other possibilities.

Another argument that has been advanced in proof of the possibility of general training from specific activity is this very interference of activities, which has served for both sides of the debate over formal discipline. If this interference may even prove an obstruction, the nonavailability of one form of training for another seems to be proven. This line of argument is to be answered by the following: Where interference is *not* found, but on the other hand an improvement, either the common element, causing the betterment in the method of procedure, or else helpful suggestion must be accountable, and the existence of a relation is evident. Where interference *is* found, those helpful factors may be lacking, but some relation must exist. That is, the method of procedure aiding in one case may be *dis*advantageous in another, and suggestions may be *un*fortunate as well as fortunate

14. **The teacher and general training.** — With this threefold possibility in mind, it is evident that there are three principles for the teacher to follow, each with a retinue of many corollaries. (*a*) He may select in a given field habits fundamental or common to the widest range, and drill on similar applications of those habits, while at the same time avoiding the habits that would interfere. (*b*) He may secure valuable methods of pro-

[1] See *Educational Review*, Vol. XXXVI., p. 29.

cedure and emphasize the attitude of mind as generally important in life. Narrowness, formalism, dogmatism, and a host of unfortunate elements in the method of procedure are to be avoided, while breadth, organization, criticism, and others advantageous are to be retained. (*c*) Finally he may not only develop definitely the ideals of action as generally applicable and to be applied, but may also increase the suggestibility of the habit taught, by substituting for chance suggestion specific applications in as many directions as possible, thus extending the likelihood of future application. Breadth of knowledge and of training will count very greatly in widening out a teacher's work and filling it with suggestion. It is evident that reviews from varying points of view, and other schemes for assisting the child to generalize or organize, all add to the possibility of suggestion.

15. **Protracted habit-formation. Special cases.** — Besides their generality and complexity, another feature of the numerous school habits listed earlier in the chapter is the fact that none of them can be cultivated as habits in a single lesson, in an hour, or in a day.[1] Most of them are brought into play only upon some special occasion, and these occasions will be very varied in character. The reaction, however, no matter how far apart the occasions for it may be, must invariably accord with the line of action of the proposed habit. How may such habits be secured? Is initiative to be developed? If so, what benefit may be expected to accrue from it two or three months later when an occasion may arise? In general, the study and demonstration of the habit are easy, but what new factors are raised by the sporadic application and development of a habit?

As far as the initiative is concerned, it is pretty clear

[1] See page 278.

either that it must be renewed from time to time by new and varied suggestions and associations with sources of motive power, or that an atmosphere favorable to the habit must be created. The value of occasional talks in calling out worthy intentions or of a good military school for creating an atmosphere of obedience illustrates this development of initiative.

The working up of practice in these habits is another of the difficult points. Shall the child be made to obey or to put things in order, or to do things quickly and accurately, merely for the sake of the practice, or merely to gain such habits? It seems superfluous under ordinary life conditions to add to the occasions for such habits. What is needed is the right mental attitude when the occasion occurs, and then the practice (and that of the right sort) will follow. Plain, bald practice in obedience, order, reliability, without any further aim than the practice, only bores, and is plainly disadvantageous rather than helpful in the formation of such habits. There are only two possibilities of using repetition in these particulars. The practice may be disguised so that its true aim is not apparent and the actions involved seem in themselves to be worth while, or the practice may be concentrated on a series of similar specific reactions included in the general class. When occasion for practice arises, imitative practice may be even more useful than a more reflective sort with young children, but there will be needed, sooner or later, the schemes for making the repetition attentive and earnest, with help at the points of difficulty and consideration of the method admitting of the greatest possibility of actual practice. A child's habit of obedience as far as his father and mother are concerned is formed early by imitation or suggestion. Later, as the habit is extended to the obedience to civic and moral law or

authority, best methods, difficult points, earnestness, and certain standards are necessarily considered, if the habit is to be an effective force in the child's life. In the case of obedience, as in that of other disciplinary habits, there is peculiar difficulty in preventing exceptions, because there can be, as a rule, no very clearly specified time for guarding against them. The occasion arises for kindness, courtesy, diligence, independence, reliability, punctuality, and so forth, but attention is not directed to the initiative; the various warnings against lapses and unpleasant experiences in connection with them have all by the passage of time lost the keen edge of their influence. Obviously, the first essential aside from the renewing of initiative is the reviving of the specific warnings against lapses, the furnishing of concrete reminders, and the promotion of self-criticism.

The situations calling out the reaction may be of so varied a nature, some favoring it, some actually menacing it, that there is hardly any possibility of removing all menaces. Some of the more typical may be pointed out; and, when the habit shows itself in good results, commendation may help to produce others like them.

It is evident then that, where habits are of these fundamental types, lessons may be given for the sake of demonstrating their real nature, or of awakening various sorts of initiative. Sometimes both may be combined in one lesson. So, too, in specific habits included in a type or in imaginary instances, a certain amount of practice may be given in the course of one or more lessons. Still other lessons may be given to pointing out the tendencies to lapse, reënforcing initiative, and in various ways guarding against exceptions. But in spite of these lessons, the great force most likely to lead to success in the formation of disciplinary habits of this sort is the almost in-

cessant, quiet, but effective succession of suggestions from the teacher indicating the goal to be attained and the desire to attain it, while a word here or there serves to stir initiative and to guard against exceptions far more effectively than many a formal lesson could do. In forming all these habits, it is not so much the formal lesson that counts as the subconscious influence exerted by a teacher.[1]

16. The importance of a scientific scheme. — This does not mean that our various phases in the formation of habits are not practically useful. The teacher with the problem and with sufficient scientific interest in it has here all of its phases provided for. He may decide how much is to be a special lesson, how much is to be incidental, what phases will need to be reconsidered, and what will take care of themselves automatically. With a wise application of the scheme of habit-formation, the teacher or parent, experienced or inexperienced, can hardly fail to find all the important devices and methods for engendering disciplinary habits. If fifty devices have failed, the rest may be tried, and with a little ingenuity some of them ought to succeed.

At the outset, however, for students still working theoretically with only a small amount of practice, it will help greatly to make a detailed application to the most important of school habits with a view to discovering the maximum of his resources. The main function of the scheme is, however, to influence the teacher subconsciously. The method with the suggestions involved will be bound to prove helpful incidentally even when no actual attempt to fall back upon it is made, and it is always available as a last resort. It would also be a desirable line of practice to treat formally various of the important habits involved in teaching of the special

[1] See Chapter II.

branches of study and art. This is easily done on lines analogous to those used in this chapter.

17. **Summary.** — To discipline a person wisely is so to manipulate his environment as to develop without waste of time or effort valuable habits. Training includes the sum-total of preparation for action. It therefore includes an equipment of both ideas and habits. Discipline applies only to the latter.

Of the habits in school discipline, the following are the most important: order, obedience, respect, reliability, independence, diligence, accuracy, quickness, carefulness, punctuality, kindness, courtesy, neatness, and erect posture. Those to be added as contributing to scholarship, and hence, indirectly, to discipline, are: habits of attention, sense discrimination, observation, interpretation, invention, logical memory, comparison, classification, inference, and accurate formulation. Habits of study are complexes of these.

From the standpoint of moral training, the larger habits of service and self-control comprise habits of attention, inhibition, decision, exertion, and expression by word and deed.

These school habits are complex, made up of classes of similar habits, each with its narrower or broader implications. Order, for example, is made up of three habits, each of which may have its possible limitation in scope. They are (*a*) having *one* definite place for each separate object to be kept in order, (*b*) the habit of recognizing the out-of-placeness of things, and (*c*) that of returning them to their place.

For moral training not only is the preceding sort of habits involved, but to them must be added: temperance in eating and drinking, cheerfulness, economy, prudence, clean-mindedness, kindness to animals, justice, devotion,

loyalty, patriotism, coöperation, conscientiousness, appreciation of the beauty and marvel of nature, and an optimistic confidence in the Supreme One which will carry with it an habitual tone of responsive, willing service.

Service is the root concept of all discipline. The stimuli calling it forth are the recognized needs of the individual himself or of others. It is made concrete by historical or literary instances and the child's own experiences. Instinct, emotion, pleasant associations, moral standards, and ideals all may serve as initiative. These motives of the higher order may need to be developed. No occasion for practice need be artificially brought about. The situations calling for service are always present. All they need is clarifying. Separate habits may be practiced, however, with profit. The development of serious intent, and the guidance of attention to the main issue, are the necessities for actual practice. Skillful performance, the use of a sense of humor, knowledge of prejudices, and warning against likely errors are the most valuable means of preventing exceptions.

There are three possibilities of benefit from special training beyond the specific line of reaction subjected to practice: (*a*) The habit pathways may altogether or in part be common to another or to many others. (*b*) The method of procedure in the special habit may be evidently applicable to a much larger field. (*c*) Mental attitudes or ideals tend by chance variation and by suggestion to extend their sphere of action. These suggestions may be internal (ideational) or external (imitative) in their immediate source. The extension of habits of order, obedience, trustworthiness, and so forth, from one person to another, and from one relation of life to many offers abundant illustration of this perhaps greatest factor in giving value to specific training.

The "energizing of the mind" is rather to be explained by the above-mentioned possibilities, but the reciprocal interference of habits argues for the possibility of the joint improvement of those more closely related.

The teacher must select habits fundamental or common to the widest range of important habits, avoiding the obstructive; he must secure valuable methods of procedure and emphasize the attitude of mind as generally important in life; and he must increase the suggestiveness of the habit taught by substituting for chance suggestion specific applications in as many directions as possible. Breadth of knowledge on the part of the teacher, and a wide scope for review, are therefore implied.

Disciplinary habits are usually protracted in their formation. This does not interfere with their selection and demonstration, but it does make necessary the renewal of initiative, the emphasis of the right attitude, the use of those occasions for practice that arise naturally, and the preventing of exceptions by pointing out typical dangers, and commendation for effective effort. According to circumstances the full lesson period may be assigned to any phase or combination of phases of the habit-forming process. The important thing where difficulty is found is to see that the teacher exhausts his resources by taking into account some systematic and comprehensive scheme of the possibilities.

CHAPTER XIII

Habit-Forming as Applied in Drill

"Repetitio mater studiorum.'

1. Drill[1] more specific, less protracted. — Discipline and moral training involve a few habits of wide range of stimulus and reaction. In fact, the habit part of the experience is represented by certain indefinite central activities which are common to all acts of that class. Were this amalgamation of diverse habits through common elements impossible, we could never collect in a score of words the essential concepts of either discipline or moral training. In the mastery of subject-matter, any attempt to do so would be absurd. To be sure, there are habits involved in general intellectual and manual training, — habits of attention, sense discrimination, observation, interpretation, invention, inference, formulation, carefulness, accuracy, verification, and the like, — but besides these are thousands of habits of all degrees of complexity and importance, from that of recognizing a certain word, of thinking 63 whenever 7×9 is seen, to the habit of thinking of the history of the United States or of England as made up of different epochs, and of locating new items of information in their appropriate connections. While those habits of larger application must be matters of gradual development in the course of a week or a term or longer, the less complex habits may be secured in a

[1] See page 41 for meaning of word in England.

single lesson or in part on one occasion and partly at another, according to the complexity of the one to be formed.

2. **Meaning of drill.** — In its simpler phases, and with no hard and fast denotation, these methods of securing habits of this sort have ordinarily been summed up in the term "methods of *drill*" or, less commonly and representing application to the arts especially, as "methods of securing *skill*." In all the books treating of drill in various subjects, there is no general foundation of principles upon which the devices or methods of drill are based, but the recommendations arise out of the experience of some observer who has had opportunities both of teaching the subject and of seeing it taught. It is safe to say that until recently few teachers have recognized the fact that drilling implies the formation of habit. To be sure, the habits included may be of any type as the term is ordinarily used, covering disciplinary habits as well as those implied in making knowledge automatic. It is often used, too, to indicate any method of fixing essentials regardless of the principle that facts may be retained not merely through repetition of one organization, but in many instances more effectively by securing variety of associations in different organizations. As such it becomes a part of the methodology of imparting ideas under the head, sometimes of presentation, and sometimes of application, rather than a part of the methodology of habit-forming. The most evident and frequent implication of the teacher in his use of the word "drill" is artificial repetition for the sake of getting facility in some branch of study. In the opinion of the author, a word is needed which shall express this part of habit-forming, and the word "drill" should be narrowed down to that signification. All through this book it has been used in this sense, the word "discipline" being used for the process of

engendering the broader type of habit ordinarily referred to by that term.

In other words, there are four conceptions included in this word "drill"; first, as pure repetition of a part of a subject or of applications of it; secondly, as review from new points of view; thirdly, as a means of getting clearness of presentation in some essential; and fourthly, as persistent retraversing in whole or in part of a more or less definite habit-path in order to make it automatic. The second and third of these lead to confusion of terms, and cannot be defended as drill, whatever the importance of the part they play in the getting and retaining of ideas. The fourth is the scientific basis for the first, explaining both its real meaning and its value.

3. Habits involved in the course of study. — Courses of study should be so outlined as to show plainly the habits to be gained as distinguished from the definite information to be acquired; but it is not often that this distinction is found either in courses of study or in books on special method.[1]

Even where subject-matter is more or less cut and dried in a course of study, it is incumbent upon the teacher to make an analysis[2] of the subject-matter with a view to discovering both the larger habits and the many smaller ones. When the time comes to give a lesson, the question must be: First, is there any small habit to be gained in this one lesson either incidentally or as the main purpose of the lesson? Secondly, are there any habits to be

[1] For a good example of a recognition of the problem, see the New York City Course of Study in Drawing and Constructive Work; also Professor Mace's "Method in History," where an excellent outline is not followed up, presumably because hitherto habit-formation has had no part in general method.

[2] See pages 98-109.

furthered by arousing initiative, by furnishing occasions for practice, or by helping the child to exercise restraint in the face of threatening conditions?

4. **Habit-forming *versus* informational subjects.** — Of the subjects taught in the elementary school, reading, writing, arithmetic, composition, spelling, singing, drawing, and other forms of manual work have habit-forming rather than information as their direct aim. Nature study, geography, history, and civics deal rather with the acquiring of information, the organization of facts. Some of these organizations need to become automatic, in order that rapid use may be made of them in relating new material, and others may contribute important aid in the formation of disciplinary or moral habits. History, especially without furnishing much material for direct habit-formation, indirectly contributes abundantly to morality and the habits implied in character by making concrete the ideas underlying such habits, by furnishing initiative through suggested motives, by making a basis for practicing habits of approval or disapproval, or by showing the painful, serious, and unfortunate results of lapses.

In the high school, language subjects, mathematics, and the arts are largely habit-forming, while science, history, literature, and the like are informational, with occasional organizations to be made automatic.

No attempt can be made in the brief space of this chapter to indicate all, or even a small part, of the difficulties that may be encountered by the teacher in connection with the many habits involved in the various subjects of the elementary schools. A few examples from the various subjects, however, will serve to aid with typical problems and to show the need of the application of the methodology of habit to the teaching of subject-matter.

5. **Reading.** — The habit of getting and rendering the meaning is to be striven for from the first. The separation of the word-drills and phonetic exercises from the reading proper is a desirable way of avoiding the mere pronouncing of a series of words when reading. This unfortunate pronouncing was promoted by the methods of the past. For a child read along until he reached a word he did not know, and then asked what it was.

The expression of meaning necessitates first comprehension of the meaning, at least of the main elements of a sentence, and then habitual modes of conveying that meaning to others. This double habit, consisting first of interpretation and then of oral reading, is promoted first by having the child study carefully the meaning in silence, and then by having him read orally. Habits of looking for the period at the end of the sentence, and habits of recognizing individual words in or out of the sentence, are smaller habits, some of which may be acquired in a single lesson.

A habit of looking for familiar words and syllables in new words, and so constructing the new, is most desirable and also implies a smaller habit of blending letters and syllables to make single compound sounds. It is evident that there are many other habits of importance in the teaching of reading.

In some of them, as in that of expressing meaning, the difficult point is to show the child the general nature of the reaction. In others it is hard to break the habit up into its subordinate reactions. In others to get a whole-hearted practice is hard, as in the pronunciation of words which seem to the child difficult or stilted. In getting new words by old forms and in blending, the pleasure attendant upon success and the intellectual emotion will, when properly emphasized, continue the practice.

Word-drills often amount to little, because the practice is merely formal. No initiative is invoked, and no attempt to prevent exceptions is made. In a purely formal way the teacher shows card after card. If one child misses, the teacher goes on in the same tone and asks the next child to repeat the miscalled word. In case of failure, he is often so pampered, and so much kindhearted and well-meant attention is bestowed upon him, that satisfaction attends even his failure, and hence a possible future carelessness is fostered. An intelligent use of initiative and guarding against lapse is essential to progress, even in so definite a direction as this.

The value of practice in reading is not often enough fully appreciated. The right sort of practice cannot be gained by reading the same book or the same two books many times. Those schools and those methods which enable the children of the first year to read fifteen of the ordinary first-year books in their first school year must be given the preference over those which keep the child reading the same book over and over again. The writer has known a child to be able to read (?) any selected page of a primer, in spite of the fact that the greatest part of the page that he read was hidden from his view.

6. Composition. — In composition, evidently, the habit of speaking and writing in sentences, of dividing them into clauses and phrases for a closer glimpse of the parts, is the essential. But before that a habit of free expression must be developed. Later, as free expression becomes too facile, it must be tempered by habits of self-criticism.

The substitution of correct for incorrect forms means getting a habit where there is already a habit path established; that is, not only making but breaking a habit. All the points for preventing lapses become of great importance here as pointed out in the chapter on the

breaking of habits. Very little ingenuity has been shown hitherto in this regard, compared with the possibilities. Play serves well as an initiative to practice here. A child hides behind a door. The hunter asks, "Is it Mary?" "No, it isn't she." "Is it James?" "No, it isn't he." "Is it Louise?" "Yes! It is I," or "Who was sitting in my chair?" "Were you?" "I was." "Was I sitting there too?" "You were a short time ago." Forms thus used by the children are likely to get sufficient attention to bring them into common use instead of the more usual incorrect form. It is a mode of making practice actual which is applicable to substitutes for most of the common incorrect expressions of children.

To teach children successfully the habit of writing in paragraphs requires a considerable study of the nature of that habit. With many teachers it merely means, — "When you have finished what you were writing and are conscious of change in the direction of thought, start a new paragraph for whatever new topic is introduced." A better plan would be to have the child led by the teacher to make a rough outline of what he is going to write about; and this is the usual method. Letter forms, as well as the various points of capitalization and punctuation, should be taught as habits, not as rules, and the teaching of grammar should result in principles which should be *habitually* applied to all new and uncertain forms or expressions, the new or uncertain form serving as the stimulus for inhibitive processes until either verified, or at least not condemned, by grammatical principles.

The habits of distinguishing between ways of treating narration, description, and exposition is also to be recommended as a preparation for a form of treatment in which these methods are complicated. In this work enough

actual practice is difficult to obtain without an initiative strong enough to induce the children to make the distinction outside of school in extra writing, whether in correspondence with their friends or just for the sake of practice.[1]

7. **Penmanship.** — In penmanship the most open neglect of the methods of habit-getting is to be found. The ordinary plan is for the teacher to exhibit a word or words on the board or in the copy book, to warn the children of certain dangers, sometimes even illustrating them (and so suggesting them to the children who might never commit that form of error), and to have the actual writing begun. Then the teacher watches them, and when some have finished tells them to put down their pens or to write another line, and so on. After a while the children hold up their papers for inspection, and the exercise is over. Other teachers, by many devices, get the children interested and eager to turn out a better copy than ever before. Then they are shown how to make a good copy, the right way of doing all the hard parts being demonstrated. While they are writing, they are reminded by quiet remarks of the teacher, now of their initiative and good intentions, now of the difficult features.

When they are through with one copy, that is examined to see where and how that could be improved. Then it is folded under or covered with the blotter (to avoid imitation of the wrong thing) and a new copy is made, while the teacher guards against exceptions to the

[1] For further applications of habit-forming in the separate branches of the school curriculum, see the Index under the headings Arithmetic, Reading, etc.

Spelling is so evidently a case of habit-getting that it has served as a basis for illustration at some length in Chapter VII., pages 111–114. With the exception of the large underlying habits there pointed out, it is a very simple case of getting small specific habits.

right forms by such timely use of the suggestions of Chapter X, and the like, as seem to fit the situation.

Much time is lost by having different systems or styles of writing in different parts of a city or in different grades. A goodly percentage of the poorer pupils move two or more times during the school year. Change in systems of writing should be introduced only in the lowest grades.

The pressure upon large systems for change in styles of penmanship would be materially lessened if boards of education ruled that changes should never be imposed above the third school year except as the children carried on the new form to the higher grades. The wholesale sweeping aside of the habits of children in the middle and higher school years in the quest of a theoretically rather than a practically superior form of penmanship is one of our most inexcusable pedagogical errors. It could not be justified even on the ground of a considerable superiority in the speed or artistic effect secured by the new method.

8. Arithmetic. — Arithmetic is essentially a habit subject.[1] The ideas involved in arithmetic are comparatively few, if its commercial features are eliminated. Almost every idea included in the subject is to become automatic. The laws of habit-formation show the economy of combining the separate processes skillfully into as few habits as possible. For example, $6+9=15$ may represent one habit; $9+6$ may be made to serve as another; $15-9$ and $15-6$ may serve as two more. These might be taught separately, and possibly without a child's discovering the relation, if enough other combinations

[1] For evidence of the variety of habits involved, see Stone's "Arithmetical Abilities, some Factors determining Them, Columbia University Contributions to Education," Teachers College Series, No. 19. New York, 1908.

were put in each of the four groups represented. On the other hand, a child may learn as one habit, *e.g.*,

$$6+9=15 \begin{cases} 6=9 \\ 9=6 \end{cases} \text{ or } + \begin{matrix} 6 \\ 9 \end{matrix} \Big\rangle 15$$

Four habits are thus amalgamated in one.

Again, in percentage and its application many texts require a different set of rules and habits for each application. Evidently one set of habits is at the bottom of all work in percentage. The peculiarities may be added to this basis, but it is unreasonable to require a large number of different sets of habits. So, too, in dealing with ordinary and decimal fractions, one standard method should be taught for manipulating each kind. If a child is ingenious enough to discover other and quicker or shorter ways, he may use them, but for the child who cannot discover his own short cuts, one habit is greatly to be preferred to many. It is only recently that concrete ways of demonstrating these arithmetical habits and the value of connecting them with past experience have been properly appreciated.

The problem of getting initiative for arithmetical automatisms is comparatively easy. The whole social expectation demands an ability to compute. It is only occasionally when bad habits of work have been formed, and lead to discouragement, that a special initiative is needed. In such cases the value of successes, no matter how far back one must go to secure them, must not be ignored. Discouragement may only be conquered by very decided encouragement. The teacher may rely on other initiative possibly at the beginning, but comparatively soon resulting satisfaction must be felt.

As a rule, children rather like doing examples, provided no greater excitement is at hand. Given a specific time

for this work when nothing else may be done, and they will figure very industriously. If a certain premium in the way of special privilege is put upon quickness combined with accuracy, the practice will be of the desirable sort.

Preventing exceptions is largely a matter of guarding against the errors which the teacher has learned by experience are likely to beset the child in his work. Self-criticism and checking off processes by other ways of computing to see whether the result is reasonable, will aid in preventing exceptions.[1]

So far it is rather numerical calculation than problem work which has been considered. This last was touched upon in a former chapter, and its need of graduation from the less difficult to the more difficult was indicated as well as the need of forestalling habits of guessing. During the last fifteen years the study of geometry has been revolutionized. Instead of mere mechanical memorizing, the student *thinks* his way through the fundamentals. A somewhat similar change is needed in problem work in arithmetic. Instead of a heterogeneous hit-or-miss series, a carefully graded series, starting with the least difficult and working up slowly to the harder problems, should be worked out on the basis of the habits involved. The importance of working back to where the child succeeds is nowhere in arithmetic as important as in problem work.

9. **Music (Singing).** — A failure to analyze the problem of teaching music has resulted in many peculiar practices, when its intimate relation to habit is considered. Musicians desire a high degree of technical skill. That means habit of one sort. But they also desire and regret their inability to get "soul" or "touch" or "feeling," all of which refer to habits of a very different sort. It is quite

[1] See page 196.

common to take such measures to secure technical skill that musical taste is thereby rendered impossible. No child can form habits of appreciation and of delicate, soulful expression who is made to practice the "same old" inartistic exercises year in and year out, unless he is fired by a tremendous initiative or finds some exceptional resulting satisfaction in the marked progress due to unusual aptitude.

In teaching singing, as a rule at least, one of the three important sets of habits involved has been neglected. Schools which have taught the children to read difficult music easily at sight have drilled on exercises which lacked all claims to the name of music. Schools which succeeded in getting these two factors, skill in reading and real appreciation of music, have neglected the habits of using the voice skillfully. An astonishing number of schools succeed in accomplishing little beyond developing a hit-or-miss appreciation of a semi-sentimental sort. Habits of using the voice correctly, habits of appreciation and of appreciative expression, and habits of sight reading are the three sorts of habits to be established in teaching these subjects.

Much remains to be done toward making concrete the methods of using the voice. Probably few outside of the professional voice trainers are competent, and charts, drawings, and the like have not yet been produced of a practical sort. With the exception of the boy who has the idea that it is feminine to sing, and the girl or boy who is inclined to be "a monotone" and finds singing difficult and disappointing, initiative is easily secured in singing, and with it practice, but this last needs to be guarded by devices to ward off carelessness. Exceptions must be similarly provided for, and especially when discouraging and difficult points are involved such as are inherent in

the correct use of the voice, where the child may easily fail to see the importance of accurately placing his tones.

10. Drawing and other forms of manual training. — In all of the so-called expressive arts, an analysis will reveal very much the same division of subordinate habits as were found in the preceding: habits of manipulating certain tools, habits of appreciation, and habits of interpretation. A definite purpose is to be accomplished. Certain ideas are brought to bear upon it as appropriate. The problem is worked out in the light of these ideas through the skill in the use of pencil and paper, color, wood working, iron working, sewing, embroidery, or some other art. Without habits of appreciation no artistic result is likely to be accomplished. The great source of initiative is found in the interest of the child and in his success. The source of exceptions lies in demanding too much, in fatigue, and in the waning of initiative as the exercise becomes an old story. Another factor is the fact that a small slip or a moment of carelessness may ruin the work of days or months, thus producing a resulting dissatisfaction fatal to the continuance of practice. The great task of the teacher must therefore be to keep up the initiative by ingenious reminders, to warn the child at danger points, to encourage him when he is conscious of failure, but, above all, so to adapt the task to the child that he will gradually develop the maximum of power desired.

Manual training has often been heralded as the savior of the boy whose mind works along the lines of his hands. Such work means doing. It is undoubtedly a boon to many a child who is counted dull from the point of view of literary pursuits. But manual training means more than doing; it means doing accurately, deftly, and neatly, and exacts its penalties for failure to work earnestly and eagerly. It often happens that the slouchy, careless dul-

lard in the ordinary studies is, after the novelty has worn off, the blundering, inaccurate, and unsuccessful worker in mechanical drawing and carpentry. An initiative is needed here for the broad fundamental habits which were discussed in a previous chapter. They need to be developed not through any one lesson or in connection with any one subject. All must combine to this end.

11. **Natural science, geography, history, and civics.** — In no subjects, however, do these disciplinary fundamental habits play a greater rôle than in these so-called informational subjects. These are not studied that the child may retain for a long time the separate facts learned. It is expected that the child will forget many facts of science, geography, and history. Two advantages accrue to the child besides the information secured. First, material is given him for the furthering of habits of the broader type, such as habits of observation, interpretation, analysis, inference, and formulation, and to these may be added habits of reverence, protection, sympathy, patriotism, conscientiousness, etc.[1]

On the other hand, there are certain organizations of fundamental facts which help the child to understand and place new knowledge. Probably no two teachers would agree as to what organizations were the essential ones, but in the main they are for each individual teacher those which he picks out for reviews and for drill. Commissions composed of theorists, supervisors, and practical teachers should carefully consider what these essential habits are, and on the basis of the scheme here presented how these essential habits are to be attained, if they are of the same difficult sort. Due allowance must be made, however, for the difference in conditions — urban, suburban, rural, or semirural conditions. Examinations from

[1] See page 239.

some central source, city or state, are the nearest approach that we make toward emphasizing drill, because teachers notice the points frequently touched upon by the examination questions and drill upon them.

It seems to be placing a great burden on initiative to expect it to suffice for making automatic these essential organizations. The real source of initiative must be drawn from an interest in the subject and an appreciation of the importance of making this organization automatic. These interests are themselves habits in many instances, but serve to carry other habits still further.[1]

In the case of nature study and geography, habits of determining structure and function in detail, of looking for underlying principles and seeking to apply them to the improvement of man's condition, are fundamental. In the case of history analogously, the essential habits include the accumulation and sifting of data, the organization of facts into laws of man's social development, the habitual search for application of those laws in the avoidance of the errors of the past, and the profiting by the successes of our forefathers. Thus it is easily seen that history in this sense (and literature as distinct from reading must be classed with it) is a great wellspring for the development of initiative of all sorts, a basis for imitation and ambition, and perhaps, above all, functioning as the most important means of demonstrating concretely the true meaning of most of the habits noticed in connection with the economical conduct of a school and in relation to moral training.

The subject, civics, may be made to cover almost as much ground as moral training. Good citizenship implies the highest possible service. Usually, however, it is made to include those points of information necessary

[1] See pages 134 ff.

for the understanding and appreciation of American institutions, but besides that there is at least a hope that habits of coöperation may be developed both for the election of worthy representatives and for the assistance of the various departments of such governmental or civic activity as education, the distribution of mail, the detection and prevention of crime, the administration of justice, sanitation, street-cleaning, and protection against fire. If such habits are to be formed, they must have some opportunity to function in definite reactions, if not in a public way at least in a narrower field, such as is furnished by the "school city" or some less complicated social organization.

12. **High school subjects.** — Space forbids even the cursory treatment of the high school subjects except to indicate that practically all high school work in foreign or ancient languages has as its aim habits of automatic interpretation, appreciation, and expression. The work in higher mathematics is analogous with that in arithmetic, while the sciences are still of the same general type and with the same fundamental aims in high schools as in the lower schools.

13. **Unconscious repetition or drill.** — A well-known teacher of history, when asked what habit was the most essentially involved in the teaching of history, replied, "a habit of tolerance." By this he implied an habitual respect for others' successes and failures, for their points of view, education, and their reactions to changing conditions of environment. Such habits are not established by definitely concentrating on them. That too often arouses a sort of counter suggestion. The sort of initiative which is effective is based on imitation skillfully suggested, with considerable emphasis of approval and disapproval. In fact, it is quite possible that the very best way to

bring about in a child such a habit is to make no attempt to teach it all, but merely to comment naturally and frankly as one would regardless of any thought of teaching. The teacher in general whose mantle of teaching becomes too evident, and is bordered with pedantry, loses much of the power that belongs to him who assumes the habiliments of the ordinary man and borders his mantle with a combination of kindliness and optimism. His loss of influence and of ability to develop initiative in others is due to counter suggestion. That is, elements of a situation intended to influence a person in one way are disregarded, and other elements of the situation lead to a reaction counter to the one desired. The easiest way to get some people to fall in line with your plans is to ask them to do the opposite, an extreme case of counter suggestion. There is no doubt that many habits of a religious, semi-religious, or moral character are never really presented nor drilled upon. They develop naturally and incidentally, and it is safe to allow them to develop in that way, remembering that unconscious learning is the best kind, if it succeeds.

All habits of wider application, like the protracted types of disciplinary habits, have elements of unconscious learning in them; habits of appreciating the scheme of nature as revealed in physics and chemistry, of catching the atmosphere of the French or German language, of looking for the elements in history which make for the success and failure of nations, are only established in the course of time as a result of much untaught learning and organizing on the part of the pupil. The formula corresponding to the habit might have been given almost at the outset, but the habit in its full development is the product of time, *i.e.* the product of numerous instances of unconscious though reflective practice.

14. **Summary.** — The problems of drill are complicated both by the pressure of the broad fundamental habits and the smallest and most specific of automatisms. Drill is the process of artificially promoting repetition for the sake of getting facility in some branch of study.

Courses of study should indicate where important habits are to be formed. Books on special method should show how these habits are to be formed. Teachers must in any case analyze the lesson for the habits implied. Subjects may be classified according as they are predominantly habit-forming or informational.

In the subject of reading, rendering the meaning previously obtained through silent interpretation, separating word-drills from the reading exercise, looking for familiar parts of words and "blending" them, are all important for the best reading habits. Perfunctory phonetic exercises, pampering and lack of criticism of the expression which is allowed to pass, are common sources of exception.

In composition, free expression, the gradual examination of work more and more critically on the basis of the sentence and its parts, correction of common errors, and the use of play as initiative, are adaptations of the principles of habit-forming. The learning of paragraphing, letter forms, punctuation, capitalization, and the application of grammatical principles should be largely habit-formation. There should also be an automatic distinction made between the ways of treating narration, description, and exposition.

Penmanship is dependent on interest and effort, on the knowledge in advance of the dangers, on casual reminders, on comparison, and on preventing the children from copying what they have just been writing. Great harm is done by having different systems of penmanship in corresponding grades of different parts of the same school

system and by too great readiness for wholesale experiment with one system of writing after another.

In arithmetic the elementary combinations must be unified as far as possible. Percentage and its applications should be made a unit. Ordinary processes in whole numbers, fractions, and decimals should be performed according to one standard scheme, the child being allowed to use other short-cut methods when he discovers them for himself. Getting initiative in general is not difficult. When a child's bad habits of work, as for example in problems, have led to discouragement, it is all-important to take him back where successes are possible. The careful graduation of all teaching of arithmetic is extremely necessary.

In all the so-called expressive arts, habits of manipulating certain tools (from the human voice to the chisel), habits of appreciation, and habits of interpretation or expression are implied. Methods may be selected, as has often happened in music, which will serve the one and make impossible the other; or certain important habits may be overlooked in the zeal for others. In manual exercises the evident accomplishment of a piece of work is a valuable source of initiative, while the great sources of exception lie in demanding too much, in fatigue, and in the waning of initiative, especially when some slip has ruined the work of days or months. The teacher's task is to keep up the initiative by ingenious reminders, to encourage at the time of failure, and above all to adapt the task to the ability of the child. Much of the method of manual work should be along the line of securing disciplinary habits.

In natural science, geography, history, and civics two advantages accrue to the child aside from the information secured. Material is given for the furthering of habits of the broader type, and certain organizations are gained,

in which new knowledge may find its place. The essential organizations which are to be made automatic should be worked out on the basis of a methodology of habit. Interest becomes the source of initiative ordinarily in these subjects, which are too large for other sources to influence effectively. Habitual reactions must lead either through science to better understanding and eventual improvement of man's condition, or through history to the avoidance of the errors and the profiting by the successes of our forefathers. Civics should train in the habits fundamental to good citizenship and actually furnish opportunities for practice through some form of social organization. Many habits are taught unconsciously through skillfully suggested imitation. Pedantry defeats this through counter suggestion. All of the general disciplinary habits have elements which are formed unconsciously.

CHAPTER XIV

Conclusion

"Train up a child in the way he should go, and even when he is old he will not depart from it."— Proverbs xxii. 6.

1. **The limitations in application.** — If the practical teacher is aided in putting his practice on a scientific basis, or at least in the realization that there is an established and scientific foundation on which his method must rest, this book will have accomplished its purpose. Most teachers have studied psychology, but of few could it be said that much study (of psychology, at least) had made them mad. Rather the intricacies of the subject have often been made so glaringly apparent and the applications so remote or trivial that the teacher has not found in the subject the help that could reasonably be expected.

It is one thing to lay down principles, quite another to interpret and apply them. The author has been inclined again and again to work out definitely sundry of the habits involved in discipline or the course of study, with a view to assisting the practical teacher. The difficulty is that it would take a disproportionate amount of space to do anything helpful for teachers in general, and even then the real application would have to be made by the teacher himself under his conditions and in answer to his needs. Consequently, it has been hoped that by abundant illustration in the earlier chapters and by a consideration of the special difficulties in the problems raised by the three chapters preceding this, that the book might be made equally helpful in its suggestion.

There are four topics which deserve at least a cursory glance in conclusion: (*a*) the relation of habit-formation to the lesson periods, (*b*) the need of a criterion for experience, (*c*) over-habituation, and (*d*) the future study of habit-formation.

2. **Habit-formation and the lesson period.** — It is quite evident from what has preceded that it is seldom possible to establish a habit in a single lesson period. The idea may be furnished, but the facility necessary for habit is not gained without more practice than is ordinarily possible in the limited time of a lesson period. One or more periods might be given to the demonstration of the habit, one or more to the initiative, several to practice, always with more or less recalling of initiative, and still other periods or parts of several could be given to preventing exceptions. On the other hand, all of these may in a simple arithmetical combination be reduced to a single period, though it would not be desirable to end the practice there.

In the case of habits involved in discipline, various phases of the habit more commonly work in incidentally with other teaching. The morning exercises serve as a time for emphasizing or demonstrating the nature of the reactions desired, or for kindling initiative. Then casual reference to that instruction or incentive is made during the day, as occasion arises. In the greater and smaller organizations involved in the course of study, now initiative and demonstration, now initiative and practice, and now demonstration, practice, and preventing exceptions or any other of the possible combinations of these four main divisions of the methodology of habit, are combined in a single lesson period, other periods following with other combinations of the phases of habit-formation until the process has been completed.

3. A criterion for experience. — The writer has much more confidence in the ability of teachers to work out experimentally the best methods of accomplishing their various tasks than he has in the ability of the psychologists to solve these problems, unless the latter get intimately acquainted with classroom situations. The best results should be obtained through joint experimentation.

The great trouble has been that teachers narrow themselves down to a system of teaching reading, arithmetic, kindergarten subjects, and so forth, following their scheme too exclusively. There is enough good procedure in teaching available for the determination of the most successful methods, both of getting ideas and habits, when the abundance of excellent teaching through the country at large is taken into account. Data of this sort must be recorded much more carefully, with greater detail, and for a longer period of time than is usual at present, in the case of habit-formation. When such records are available, they need to be organized according to some valid, comprehensive scheme. The experiences of successful teachers are always helpful, but are oftentimes so conflicting that a criterion for judging their correctness from a scientific point of view, and for making more complete search for other possible devices, has long been needed. It is hoped that the principles laid down in this book may serve some such useful purpose. In so far as any device in question serves to promote the study of the habit by the teacher, to make its nature clear to the child, to kindle his initiative, to further his practice, and to prevent exceptions, in so far it is good and the only questions left are, "Would not another device be still more efficient at certain points?" and "What is the relative value of the points of strength and weakness inherent in this device as compared with

another?" Many times we are obliged to admit the practical evenness of the balance and the truth of the old maxim that "there are many ways of relieving a feline of its pelt." That fact, however, does not lessen the desirability of some basis for judging the method on that account. Pedagogics has been the very prey of the method monger for just the reason that it lacked any scientific system of possibilities. This book is a step in that direction, since it does claim to have organized the usage of good teachers and to have reduced the data to form for a place in a science of education.

It is by no means asserted that to be a good teacher everybody must follow out a set procedure, or that every good teacher does it consciously. It *is* asserted that, consciously or not, every good teacher accomplishes the results that would be accomplished by consideration of this sort. Presumably these results are not obtained or obtainable by chance. Deep down in consciousness analyses are being made and reactions are modified by them without the teacher's noticing the fact. The experienced and successful teacher should be gratified to discover both where his practice is pedagogically sound and covers the ground of its possibilities, and where he has not exhausted his resources. The right point of view will not help him alone, but will also light the path of the inexperienced, and not only save them many years of experience to reach the same degree of skill, but will gain them a power to develop quite beyond that reached by teachers who succeed through experience alone. Teaching is an artistic pursuit. It is never perfect.

4. **Over-habituation.** — Radestock, in his monograph on "Habit in Education," in common with others, emphasizes to a considerable degree the disadvantages of extreme or over-habituation. Although the subject is,

strictly speaking, somewhat removed from the process of forming habits, the writer wishes to take issue at several points with the point of view implied by the term. There is no such thing as over-habituation. There is such a thing as *mal*-habituation and what might be called *under*-accommodation, *i.e.* the loss of ability to make new adjustments. If a man becomes absent-minded at times and has a far-away look in his eyes, it does not indicate too many habits, but rather that he lacks the ability to direct his attention to the task at hand and to suppress the pleasant reminiscence. It is a case of mal-habituation or disproportionate habituation. Any unfortunate habit may be considered one habit too many, but it is rather a case of mal-habituation. On the other hand, in old age men and women gradually cease to come in contact with new situations, and consequently to make new adjustments. There is an ever increasing reliance upon automatic action and a growing dislike for new adjustment. To what degree this is necessary is a serious question. With the failure to keep up physical exercise as a result of various ills, presumably a certain amount of ambition and adaptability disappears, since these imply physical energy and the opening up of new brain connections.

Exceptions seem to prove the possibilities under wiser guidance. The writer recently met a man who had been playing golf two years, starting when he was *eighty-one* years old. He was playing a good game, which showed clearly the ability to make new adjustments. The fact that he started in to play a new sort of game at such an advanced age is additional evidence of his adaptability. We often meet the aged person of keen mind and wit. But more often the loss of spontaneity or the ability to make new adjustments is evident. The person has become a machine, a creature of habit. In one sense he is certainly over-habituated.

Perhaps the most serious cases of over-habituation are found among the unskilled laborers of the peasant and matured child-labor classes. Where year in and year out the same task, the same food, the same dwelling, and the same outlook deadens all ambition, over-habituation in the sense of under-accommodation early assumes full sway. Somewhat of variety and of occasion for play of the imagination is necessary to preserve the mental spark that makes for progress. On a smaller scale, those in the most favored surroundings gradually condemn themselves to ignorance of one branch of knowledge after another, until, in the end, the performance of a daily round becomes habitual and practically invariable.

5. The future scientific study of habit-formation. — Elsewhere the author has alluded to the meagerness of the aid rendered our problem by psychology and to the neglect of habit-forming by educational theorists. He knows of *no* school habit of discipline or drill which has been investigated scientifically from the standpoint of its *formation*. Even in the cases of habit-forming in other fields, which have been studied scientifically, either the mode of studying and demonstrating the habit has been neglected, or else the methods of getting initiative, practicing or preventing exceptions, have been slighted. In general, these habits have been studied for the amount of repetition and the time of practice with little regard to such manifestly disturbing and variable factors as initiative, interpretation of the problem, attention, quality of practice, and the measures for avoiding errors or lapses. Only a beginning has been made. Investigations are needed which will give a general criterion of what may be expected in connection with the various kinds of drill. If special method is ever to reach a scientific basis, instead of ignoring all attempt to get at the automatic elements involved, it must investigate

them with regard to the main subdivisions of the habit-forming process. The author believes that neither experimental psychology nor experimental pedagogy can ignore these main issues without seriously vitiating the results. So in the details of school management and discipline, as well as moral training, while their generality will not make them as fruitful a field for the scientific experimentalist, there is no less need of careful records and statistics regarding the various habits included in those terms. These investigations should be of a character to show such analyses of the habits, such modes of demonstration, such sorts of appeal to initiative, such methods of practice, and such means of preventing exceptions as seem theoretically sound and have been found to be most practicable.

6. **Summary.** — It has been found practicable to include applications with each point and to treat the special difficulties in special chapters. Four topics remain: —

(*a*) It is seldom possible to establish a habit in a single lesson. One or more lesson periods may be necessary for any phase or complex of phases.

(*b*) A criterion for experience is needed. The experiences of successful teachers are always helpful, but their procedure is so often conflicting that some systematic and theoretically sound scheme of teaching must be consulted, if judgment is to be made between them. It is not denied, however, that there may be more than one correct method, nor is it asserted that every good teacher intentionally follows any such scheme. It *is* asserted that the requirements of habit-forming must be fulfilled consciously or unconsciously, or else the results are only apparent.

(*c*) Over-habituation, more properly *mal*-habituation or *under*-accommodation, is the loss of ability to make new

adjustments. Lack of variety in one's occupations or his avocations tends to bring about this misfortune, which is rarely escaped in old age. The exceptions, however, seem to indicate the possibility of escape. On a smaller scale many in the most favored surroundings condemn themselves to ignorance or inaction of one sort or another, until a daily routine secures a firm hold upon them.

(*d*) There is need of the scientific study of individual school habits with due reference to the important considerations in the methodology of habit. No such study has been made. Here is a field both for experimental pedagogy and for experimental psychology. But neither can profitably investigate in these directions and ignore the main divisions of the habit-forming process.

APPENDIX

Several years ago the application of the so-called "formal steps" in the planning and criticism of lessons was considered highly important. Many, if not most, normal and training schools arranged all of their work as far as they could to conform with these steps in the process of teaching. The movement did not last, however, because the scheme was impossible on the one hand, and too formal on the other. It was impossible, because it was supposed to cover all teaching, regardless of the fact that ideas and habits do not fit in the same mold. It was too formal in that it failed entirely to recognize the place of the automatic as a disturbing and modifying factor in the process of instruction. Nevertheless, the scheme had a permanent influence, since it led to careful analysis of teaching as an artistic process, not to be trusted to chance or blind imitation.

The Brooklyn Training School for Teachers has recognized in its procedure now for several years a comprehensive method-form, embracing both habit and idea. This scheme, indicated by the observation-form below, has been, with considerable freedom in its interpretation and adaptation, the basis of the definitely planned work. In the second half of the first year the students are sent to the model school for an hour a week. They are required to decide whether the lesson is a habit-forming or an idea-forming lesson, and to indicate what phases of the teaching process are manifested in the lessons observed, with the following method-form as a guide.

FIRST YEAR, SECOND TERM

I. Method of Imparting Ideas

Analyze the lesson by making use of any or all of the following headings: —

1. Preparation: how the minds of the pupils were prepared for the new ideas.
2. Presentation of the new ideas.

3. Organization: how the pupils formed generalizations, or how they arranged the new ideas in systems.

4. Application.

II. Method of Forming Habits

Analyze the lesson by making use of any or all of the following headings: —

1. Getting the idea of the habit: how the pupils got the notion of what the habit was to be.

2. Getting initiative: what appeal was made to the pupils' natural tendencies, feelings, interests, or other motives.

3. Practice: how practice was made effective.

4. Preventing exceptions: how temptation and tendencies to lapse were treated.

N.B. If it is observed that any phase of the teaching process is provided for naturally or automatically by the pupils themselves, state the fact.

BIBLIOGRAPHY

THE literature dealing with habit falls into five classes: the philosophical discussions, the brief sections in general text-books on psychology, investigations or observations of habit-formation in children or in animals, experimental study of the effects of practice and attention under various conditions, and pedagogical theory as involved either in drill or school management, which have been illumined only here and there by really scientific investigation. The author has endeavored to acquaint himself with the important contributions from all these sources. The class to which each title belongs will be apparent either from the title or the comment.

AIKIN, C. "Methods of Mind-training." New York, 1895.
(Contains exercises which have proved to be useful.)

ALLEN, A. "Some Experimental Conclusions in Practice and Habit," *Journal of Pedagogy*, Vol. XIX., pp. 237–254.

ANDERSON, W. S. "Studies in the Effect of Physical Training," *American Physical Education Review*, Vol. IV. (1899), p. 65.

ANDREWS, B. R. "Habit," *American Journal of Psychology*, Vol. XIV., pp. 121–149.
(An excellent though brief general discussion of habit from the point of view of modern psychology. Deals very briefly with habit-formation.)

ANGELL, J. R. "Psychology." (Rev. ed.) Holt, 1908.

ANGELL, J. R. "Formal Discipline in the Light of the Principles of General Psychology," *Educational Review*, Vol. XXXVII., pp. 1–14.
(Finds a basis for formal discipline. Introduces articles by Judd and Pillsbury, for which see below.)

ANGELL AND COOVER. "General Practice Effect of Special Exercise," *American Journal of Psychology*, Vol. XVIII., pp. 328, 340.
(Finds data for extension of facility beyond specific training.)

ANGELL AND MOORE. "Reaction-times" (a study of habit and attention), *Psychological Review*, Vol. XIII., 1896.

ARISTOTLE. "Nicomachean Ethics." Trans. by Browne. London, 1853.

(Distinguishes between passion, capacity, and habit. Habit is distinguished from virtue by the fact that virtue is free from excess and defect in action.)

ARNOLD, F. "The Psychology of Interest," *Psychological Review*, Vol. XIII., pp. 221–238 and 291–315.

(One of the best studies of interest available.)

BAGLEY, W. C. "The Educative Process." Macmillan, 1905.

(Deals briefly with habit-formation.)

BAGLEY, W. C. "Class-room Management." Macmillan, 1907.

(Discusses the "law of habit-building," and treats the formation of several disciplinary habits without a formulated method.)

BAIN, A. "Emotions and the Will." (3d ed.) London, 1875.

(See pp. 442 and 443.)

BAIR, J. H. "The Practice Curve," *Psychological Review Monograph Supplement*, No. 19 (1902), pp. 1–70.

(One of the most careful and suggestive of the recent scientific studies of habit-formation. "The greater the number of possible reactions, the slower the adjustment and the later the time at which no errors will be made.")

BAIR, J. H. "The Process of Learning," *New York Teachers' Monographs*, Vol. IV., p. 51. (December, 1902.)

BALDWIN, J. M. "Mental Development in the Child and the Race." New York, 1895.

BALDWIN, J. M. "Social and Ethical Interpretations in Mental Development." New York, 1897.

BALDWIN, J. M. "Development and Evolution." New York, 1902.

(All three of these books deal with the foundations of development, and therefore of selection and habit.)

BARTH, P. "Die Elemente der Erziehungs- und Unterrichtslehre." Leipsic, 1906.

(Habit is treated here according to the traditional form as a phase of will-training and upon no method basis.)

BAWDEN, H. H. "Study of Lapses," *Psychological Review Monograph Supplement*, Vol. III., No. 4, pp. 1–122.

(Interesting as a study of exceptions and variation from *habits already formed*, making therefore a basis for habit-breaking.)

BENN, A. W. "Habit and Progress," *Mind*, Vol. XI. (1886), pp. 243–251.

BERGER. "Ueber den Einfluss der Uebung auf geistige Vorgänge," *Philosophische Studien*, Vol. V., pp. 170–178.

(Concludes that training widens the range of associations.)

BINET ET HENRI. "La Memoire des Mots," *Année Psychologique*, Vol. I., pp. 1–59, 1895.

(Studies conditions for the best memory of words, and traces effect of imagination in producing errors or variations.)

BOLTON, T. "Relation of Motor Power to Intelligence," *American Journal of Psychology*, Vol. XIV., pp. 622–631.

(The part of the article referred to furnishes data as to practice effects for different abilities and ages.)

BOONE, R. G. "Science of Education." New York, 1904.

(Considers the instinctive basis, but neglects habit-formation.)

BOSANQUET, B. "Social Automatisms and the Imitation Theory," *Mind*, Vol. XXIV. (1899), pp. 167–175.

BOURDON, B. "Recherches sur l'Habitude," *L'Année Psychologique*, Vol. VIII. (1901), pp. 327–340.

(Through experiments of nine types, he studies the influence of habit, its limitations, and its persistence. The effect of practice only is considered.)

BRYAN, W. L. "On the Development of Voluntary Motor-ability," *American Journal of Psychology*, Vol. V., pp. 125 ff.

BRYAN AND HARTER. "Studies on the Telegraphic Language: the Acquisition of a Hierarchy of Habits," *Psychological Review*, Vol. VI. (1899), pp. 346–375.

(One of the best studies of habit-formation by the experimentalists. Limited to the effects of practice, however.)

BURNHAM, W. H. "The Hygiene and Physiology of Spelling," *Pedagogical Seminary*, Vol. XIII., pp. 474–501.

BURNHAM, W. H. "The Hygiene of Drawing," *Pedagogical Seminary*, Vol. XIV.

BUTLER, J. (Bishop). "Analogy of Religion," Part I., Chapter V. Edited by W. E. Gladstone. Macmillan, 1896.

(An interesting practical discussion.)

CARPENTER, W. "Mental Physiology." London, 1874.

(A valuable point of view leading toward the modern psychology of habit.)

CHANCELLOR, W. E. "Motives, Ideals, and Values in Education." Boston, 1907.

(Predicts that habit is "some day to be the subject of treatises and tomes.")

CICERO, M. T. "Tusculan Disputations," Vol. II., pp. 35–40.

COLE, L. W. "Concerning the Intelligence of Raccoons," *Journal of Comparative Neurology and Psychology*, Vol. XVII., pp. 211–261.

Connecticut School Document, No. 12. Hartford, 1904.

(A valuable report of the study of English involving recognition of the part played by habit.)

CORNMAN, O. "Spelling in the Elementary School." Ginn, 1902.

CURTMANN, W. J. G. "Lehrbuch der Erziehung." Heidelberg, 1846.

(Contains the keenest analysis of the problem of making and breaking habits up to the times of James's essay.)

DAVIS, W. W. "Researches in Cross-education," Studies from the Yale Psychological Laboratory, Series I., Vol. VI., pp. 66 ff. and Vol. VIII., pp. 64 ff.

(Finds that training of the right side of the body does develop the left side.)

DEARBON, W. F. "The Psychology of Reading." Science Press, New York, 1906.

(A valuable study of habits of eye-movement.)

DE GARMO, C. "Interest and Education." Macmillan, 1904.

DEWEY, J. "School and Society." Chicago, 1899.

(See Classification of Instinct, pp. 47–61.)

DEWEY, J. "Interest and the Will." University of Chicago Press, 1895.

DEXTER, G. "Survival of the Fittest in Motor Training," *Educational Review*, Vol. XXIII , pp. 81–91.

DOWNEY, J. E. "Control Processes in Modified Handwriting," *Psychological Review Monograph Supplement*, Vol. IX., pp. 1–147.

DUMONT, L. "De l'Habitude," *Revue Philosophique*, Vol. I. (1876), pp. 321–366.

(A very carefully thought out philosophy of habit from a purely theoretical point of view. Not in touch with the psychology of to-day.)

DUTTON, S. T. "School Management." Macmillan, 1898.

EARHART, L. B. "Systematic Study in the Elementary Schools," *Columbia University Contributions to Education.* New York, 1908.

(An excellent analysis of certain habits of study.)

EBBINGHAUS, H. "Ueber das Gedächtniss." Leipsic, 1885.

(His classic experiments in memory deal largely with habit-formation.)

EBBINGHAUS, H. "Grundzüge der Psychologie." (2d ed.). Leipsic, 1905.

(See pp. 644–676, treating memory and association, and pp. 707–720, dealing with training and habit.)

EBERT AND MEUMANN. "Ueber einige Grundfragen der Psychologie der Uebungsphänomene im Bereiche des Gedächtnisses," *Archiv für die gesammte Psychologie*, Vol. IV. (1905), pp. 1–232.

(An investigation that has reopened the question of formal discipline. As a result of their study they advocate formal memory training, but through the development of unifying systematization rather than mechanical memorizing of the pure habit sort.)

EISLER, R. "Wörterbuch der philosophischen Begriffe," pp. 295–296 and 321–322. Berlin, 1900.

ELIOT, C. "Educational Reform." Century, 1898.

EPHRUSSI, P. "Experimentelle Beiträge zur Lehre vom Gedächtniss," *Zeitschrift für Psychologie*, Vol. XXXVII. (1905), pp. 56–101, 161–234.

(Finds that practice of smaller series separately rather than of the whole at once is most effective for nonsense syllables. In word and number pairs, the reverse is true.)

ERDMANN AND DODGE. "Psychologische Untersuchungen über das Lesen auf Experimenteller Grundlage." Halle, 1898.

(The first thorough attempt to get at the habits of eye-movement involved in reading.)

EXNER, S. "Experimentelle Untersuchung der einfachsten psychologischen Prozesse," *Pflüger's Archiv*, Vol. VII., pp. 601–660.

(One of the earliest scientific investigations of reaction-times, showing also the effect of practice in reducing the time.)

FECHNER, G. T. "Beobachtungen welche zu beweisen scheinen das durch die Uebung der Glieder der einen Seite die der anderen zugleich mit geübt werden, *Math.-Phys. Classe*, Vol. X. (1858), p. 70.

FINDLAY, J. J. "Principles of Class Teaching." London, 1902.

(Not only makes the distinction between instruction and the development of skill, but illustrates and starts tentatively a methodology of the latter.)

FRACKER, G. C. "Transfer of Training in Memory," *Psychological Review Monograph Supplement*, Vol. IX., pp. 26–102.

GANNETT, W. E. "Blessed be Drudgery." New York, 1886.

(An excellent sermon, illustrating the development of initiative.)

GILBERT AND FRACKER. Effect of practice in reaction and discrimination for sound upon time of reaction and discrimination for other forms of stimuli, University of Iowa Studies in Psychology, Vol. I., p. 62.

GROOS, K. "Play of Man." Trans. by E. Baldwin. New York, 1901.

GROOS, K. "Play of Animals." Trans. by E. Baldwin. New York, 1898.

(These two excellent studies, while dealing with instinct, suggest numerous examples of habit-forming with play as the initiative and source of satisfaction.)

HALL, G. S. "Adolescence." Appleton, 1904.

(See for adolescent initiative.)

HALLECK, R. P. "Education of the Central Nervous System." Macmillan, 1904.

(Especially pp. 222–237.)

HAMILTON, W. "Lectures on Metaphysics." London, 1859.

(See Lectures XVIII. and XXX. An interesting treatment of habit from the point of view of his philosophy.)

HAMMOND. "Logic and Allied Disciplines," *Psychological Review*, Vol. XIII., pp. 1–22.

HARTLEY, D. "Observations on Man." (Prop. XXI. in 6th ed.) London, 1834.

HENDERSON, E. N. "Study of Memory for Connected Trains of Thought," *Psychological Review Monograph Supplement*, Vol. V. (1903), No. 6, pp. 1–94.

HERBART, J. F. "Pädagogische Schriften," Vol. I., No. 147. (Ed. by Hartenstein.)

HERBART, J. F. "Outlines of Educational Doctrine." Trans. by Lange and annotated by De Garmo. Macmillan, 1901.

HERBART, J. F. "Science of Education." Trans. by Felkin. Heath, 1893.

(Consult these for his doctrine of interest, which is developed in a form which makes it available as a source of initiative.)

HINSDALE, B. H. "Art of Study." New York, 1900.

HOOPER. "Force of Habit." Philadelphia, 1833.

HORNE, H. H. "Psychological Principles of Education." Macmillan, 1906.

(Contains brief resumé of habit, including habit-formation.)

HUEY, E. B. "Psychology of Reading." Macmillan, 1907.

(Very important study of habits involved in reading.)

HUME, D. "Treatise on Human Nature." London, 1739.

JAMES, W. "Principles of Psychology," Vol. I., pp. 104–127. Holt, 1890.

(The chapter on "Habit" is the classic treatise on the subject. Appeared first in the *Popular Science Monthly*, Vol. XXX., pp. 433–451. Included also in his "Psychology," Briefer Course.)

JAMES, W. "Talks to Teachers on Psychology." Holt, 1894.

(Similar to the above, but not identical.)

JASTROW, J. "Fact and Fable in Psychology." Houghton, Mifflin, 1900.

(Good chapter on automatisms.)

JENNINGS, C. J. "Behavior of the Lower Organisms." Macmillan, 1906.

(Especially pp. 253–259, which treat of habit in lower organisms.)

JENNINGS, C. J. "Contribution to the Study of Lower Organisms," Carnegie Institution Publication, No. 16.

(Contains his theory of tropisms.)

JOHNSON, W. S. "Experiments on Motor-education," Studies from the Yale Psychological Laboratory, Series I., Vol. X., pp. 81 ff.

JOHNSON, W S. "Researches in Practice and Habit," Studies from the Yale Psychological Laboratory, Series I., Vol. VI., pp. 51–103.

(Among the first records of investigations made on school children relative to any phase of practice. Also indicates the desirability of preliminary trials, *i.e.* getting the idea of the habit.)

JOST, A. "Die Assoziationsfestigkeit in ihrer Abhängigkeit von der Verteilung der Wiederholungen," *Zeitschrift für Psychologie*, Vol. XIV., pp. 436 ff.

(Shows in his experiments the advantages of distributing practice.)

JUDD, C. H. "Psychology, General Course." Scribners, 1906.

(Especially pp. 213–230.)

JUDD, C. H. "Practice and its Effect on the Perception of Illusions," *Psychological Review*, Vol. IX., pp. 27–39.

JUDD, C. H. "Practice without Knowledge of Results," Studies from the Yale Psychological Laboratory, Series II., pp. 185–198.

(The second of these suggests the desirability of letting the child know his progress.)

JUDD, C. H. "Relation of Special Training to General Intelligence," *Educational Review*, Vol. XXXVI., pp. 28–42.

(Finds ground for such a relation.)

JUDD, C. H. "Genetic Psychology for Teachers." Appleton, 1903.
(See pp. 161–235 for study of the implications of writing habits, and pp. 236–264 for analysis of reading problem.)

KENNEDY, F. "Experimental Investigation of Memory," *Psychological Review*, Vol. V., pp. 477 ff.
(Good general review of field, aside from the experimentation and good bibliography.)

KIRKPATRICK, E. A. "Fundamentals of Child-study." Macmillan, 1903.
(Valuable discussion of the basis of habit.)

KIRKPATRICK, E. A. "Genetic Psychology." Macmillan, 1909.
(Especially pp. 111–126.)

KIRKPATRICK AND STUDENTS. "A Study of Habit." Fitchburg, Massachusetts, 1909.
(Interesting study worked up by Professor Kirkpatrick's pupils.)

KURTIDIS, A. P. "Gewöhnung und Gewohnheit." Athens, 1893.
(As a dissertation for the doctorate, it is much clearer and more practically helpful than Radestock's, though rather slipshod. Has an extended but ill-chosen bibliography.)

KUSSMAUL, A. "Störungen der Sprache." (3d ed.) Leipsic, 1885.

LADD, G. T. "Psychology, Descriptive and Explanatory." Scribners, 1896.

LEDERER. "Die Methodik der Gewöhnung." Vienna, 1879.

LINDNER, G. A. "Encyklopädisches Handbuch der Erziehungskunde." Leipsic, 1891.

LIPMAN. "Die Wirkung der einzelnen Wiederholungen," *Zeitschrift der Psychologie*, Vol. XXXV., pp. 195 ff.

MCALLISTER, C. N. "Researches on Movements used in Writing," Studies from the Yale Psychological Laboratory, Series I., Vol. VIII., pp. 21–63.

MCKEEVER. "Psychology and the Higher Life." Topeka, Kansas, 1906.

MCMEIN AND WASHBURNE. "Effect of Mental Type on Motor Habit," *American Journal of Psychology*, Vol. XX., pp. 282–284.

MACE, W. H. "Method in History." Boston, 1902.
(Outline alludes to study habits, but method is not provided for.)

MAHER, M. "Psychology." Longmans, 1903.

MAJOR, D. R. "First Steps in Mental Growth." Macmillan, 1906.

(A valuable study of investigations into the child's early development.)

[EIKLEJOHN, A. "Is Mental Training a Myth?" *Educational Review*, Vol. XXXVII., pp. 126–141.

[ILL, J. "Analysis of the Phenomena of the Human Mind." London, 1829.

(See Vol. II., Chapter XXIV.)

[OORE, K. C. "Mental Development of a Child," *Psychological Review Monograph Supplement*, Vol. I., No. 4, pp. 1–148.

(Especially pp. 12–23, dealing with beginning and evolution of he habit of sucking the thumbs.)

MOORE, T. V. "Study of Reaction-time and Movement," *Psychological Review Monograph Supplement*, Vol. VI., pp. 1–86.

(Finds effect of practice slight for form of movement tried.)

MORGAN, C. L. "Habit and Instinct." New York, 1896.

(The whole book relates to our subject, but especially pp. 144–166. Sets forth clearly the "utility of restlessness.")

MÜLLER AND PILZECKER. "Experimentelle Beiträge zur Lehre vom Gedächtniss," *Zeitschrift für Psychologie*, Erganzungsband, I. (1900), pp. 1–288.

(Shows the complexity of the problem, as evidenced by differences in results under like conditions.)

MÜLLER AND SCHUMANN. "Experimentelle Beiträge zur Untersuchungen des Gedächtnisses," *Zeitschrift für Psychologie*, Vol. VI., pp. 81–190 and 257–339.

(A very complete study attempting to trace the effect of body rhythms and various associations.)

MURPHY, J. J. "Habit and Intelligence." London, 1869.

(Deals with habit from the standpoint of animal behavior, considering instinct as habit. See Chapter XV.)

MYERS, G. E. "Moral Training in the School," *Pedagogical Seminary*, Vol. XIII., pp. 409–460.

(Important. Contains good bibliography.)

NETSCHAJEFF, A. "Experimentelle Untersuchungen über die Gedächtnissentwickelung bei Schulkindern," *Zeitschrift für Psychologie*, Vol. XXIV. (1900), pp. 321–351.

(Shows that children remember best words indicating concrete things and feelings. Correspondence between memory for abstract words and for numbers is borne out by his tests.)

NIEMEYER, A. H. "Grundsätze der Erziehung und des Unterrichts für Eltern, Hauslehrer, und Schulmänner." (7th ed.) Halle, 1819.

O'SHEA, M. V. "Language and Linguistic Development." Macmillan, 1907.

(Illustrates automatic habit-forming in language.)

OSTERMANN, W. "Interest." New York, 1899.

PILLSBURY, W. B. "Effects of Training on Memory," *Educational Review*, Vol. XXXVI., pp. 15–27.

(Good résumé of situation.)

PILLSBURY, W. B. "Attention." Macmillan, 1908.

(Especially Chapter VII.)

RADESTOCK, P. "Die Gewöhnung und ihre Wichtigkeit für die Erziehung." Berlin, 1882.

(An important monograph, though not very helpful from the standpoint of habit-formation. Contains an extended bibliography.)

RADESTOCK, P. "Habit and Education." Trans. by Caspari. Heath, 1894.

(Translation of the preceding with the omission of bibliography and certain notes.)

RAVAISSON, F. "De l'Habitude." Paris, 1838.

(An interesting study of the philosophy of habit, representative until very recently of the English and French type. In this case habit is considered in its relation to space, time, periodicity, and "superorganic" cause.)

REID, T. "Essays on the Active Powers of Man." (Essay III.) Edinburgh, 1788.

REIN, W. "Encyklopädisches Handbuch der Pädagogik." Langensalza, 1904.

(See articles under Fertigkeit, Gewöhnung, and Einübung.)

REUTHER. "Beiträge zur Gedächtnissforschung," *Psychologische Studien*, Vol. I., pp. 4 ff.

(Careful study of repetition, and brings bibliography to date, 1905.)

REYNOLDS. "Discourses." London, 1877.

ROMANES, G. "Mental Evolution in Animals." New York, 1895.

ROUSSEAU, J. J. "Émile." Trans. and abridged by Payne. New York, 1897.

(Recognizes the importance of habit and the native basis for its development.)

ROWE, S. H. "The Physical Nature of the Child and how to study It." (Rev. ed.) Macmillan, 1905.

(Contains chapters on habits of posture and movement.)

ROWE, S. H. "The Lighting of Schoolrooms." Longmans, 1904.
(Analyzes bad habits of using eyes, and suggests means of bringing initiative to bear, and of preventing exceptions to desirable habits.)

ROYCE, J. "Outlines of Psychology." Macmillan, 1904.
(Compare for use of term "initiative," and for relation of memory to habit.)

SCHLEIERMACHER, F. "Pädagogische Schriften." Berlin, 1876.

SCHLEIERMACHER, F. "Erziehungslehre." (Werke, 9te Band.) Berlin, 1894.
(Distinguishes between idea and habit, but develops no method for the latter.)

SCHMIDT, A. "Encyclopädie des gesammten Erziehungs- und Unterrichtswesen." Gotha, 1876–1887.
(See article on Gewöhnung by Deinhardt, Einübung by K. A. Schmid, and Fertigkeit by Eisenlohr.)

SCHNEIDER, G. H. "Der menschliche Wille." Berlin, 1882.

SCHNEIDER, G. H. "Der thierische Wille." Leipsic, 1880.
(Interesting and semipopular presentations of development.)

SEELEY, L. "New School Management." New York, 1900.

SHEARER, G. "Grading of Schools." New York, 1898.

SHEARER, G. "Morals and Manners." New York, 1904.

SHERRINGTON, C. S. "The Integration of the Nervous System." Scribners, 1906.
(A classic in its field.)

SHINN, M. W. "Notes on the Development of a Child," University of California Studies. Berkeley, 1893.

SHINN, M. W. "Biography of a Baby." Boston, 1900.

SMITH, M. K. "Reading and Memorizing of Meaningless Syllables," *American Journal of Psychology*, Vol. XVIII., pp. 504–513.

SMITH, W. G. "The Place of Repetition in Memory," *Psychological Review*, Vol. III., pp. 21–31.
(Shows great individual variation in the results of *inattentive* repetition.)

SPAULDING, E. G. "Establishment of Association in Hermit-crabs," *Journal of Comparative Neurology and Psychology*, Vol. XIV., pp. 49–61.

STEIN, G. "Cultivated Motor Automatisms," *Psychological Review*, Vol. V., 1898, pp. 295–306.
(A study of automatic habit-formation under experimental conditions.)

STEWART, D. "Works" (ed. by Hamilton), Vol. II., pp. 120–143. Edinburgh, 1854.

STONE, C. W. "Arithmetical Abilities, some Factors determining Them," *Columbia University Contributions to Education*, No. 19. New York, 1908.

(A study of quickness and accuracy in the mechanics and reasoning of arithmetic under diverse conditions. Suggests supervision, testing, concreteness, drill, etc., but does not relate them to a scheme for forming such habits.)

STOUT, G. F. "Analytical Psychology." London, 1896.

(Contains one of the best discussions of habit in general.)

STRATTON, G. M. "Experimental Psychology." New York, 1903. (Chapter XI.)

STRUMPELL, L. "Pathologische Psychologie." Leipsic, 1882.

SULLY, J. "Human Mind." Vol. II., Chapter XVIII., pp. 224–233, 280 ff. London, 1892.

(Good brief treatment of habit.)

SWIFT, E. F. "Mind in the Making." Scribners, 1908.

(Contains a very readable account of habit-formation. See especially Chapter VI., pp. 169–218.)

SWIFT, E. F. "Studies in the Psychology and Physiology of Learning," *American Journal of Psychology*, Vol. XIV., pp. 201–251.

(Basis of the preceding.)

TARDE, G. "Laws of Imitation." Trans. by Elsie Clews Parsons. New York, 1903.

(A monumental study.)

THORNDIKE, E. L. "Elements of Psychology." Seiler, New York, 1905.

THORNDIKE, E. L. "Principles of Teaching." Seiler, New York. 1906.

(Extremely helpful books from the standpoint of habit-formation.)

THORNDIKE AND WOODWORTH. "The Influence of Improvement in one Mental Function upon the Efficiency of other Functions, *Psychological Review*, Vol. VIII., pp. 247–261, 384–395, and 553–564.

(A study in the problem of formal discipline. Compare with *Educational Review*, Vol. XXXVI., pp. 1–42.)

TITCHENER, E. B. "Outlines of Psychology." Macmillan, 1896.

(A concise statement of the development from instinct to automatic action is contained in Chapter X.)

VOGT, R. "Ueber Ablenkbarkeit und Gewöhnungsfähigkeit," *Kraepelins Psychologische Arbeiten*, Vol. III., pp. 62–201.

(Deals with the possibility of becoming accustomed to disturbing factors.)

VOLKMAN. "Ueber den Einfluss der Uebung auf das Erkennen raümlicher Distanzen," *Math.-Phys. Classe*, Vol. X., pp. 38 ff.

(Finds no effect in actual control after six months of regular practice.)

WASHBURN, A. "Animal Mind." New York, 1907.

(An excellent résumé of studies on the subject.)

WHITE, E. E. "Art of Teaching." New York, 1901.

(Chapters I., II., III., and VII. treat of skill or drill.)

WHITE, E. E. "Elements of Pedagogy." New York, 1886.

(Treats school incentives briefly, pp. 320–328.)

WINCH, W. H. "Immediate Memory in School Children," *British Journal of Psychology*, Vol. I., pp. 127–134, and Vol. II., pp. 52–55.

(Finds steady improvement of memory through school grades, and that poor memory is improvable by practice.)

WINCH, W. H. "Transfer of Improvement in Memory," *British Journal of Psychology*, Vol. II., pp. 284–293.

(Believes such transfer to be clear. Number of children experimented upon was small.)

WOODWORTH, R. S. "Accuracy of Voluntary Movement," *Psychological Review Monograph Supplement*, Vol. III., No. 13, 1899, pp. 1–114.

(Especially pp. 77–114, in which he studies the effects of variety of conditions, fatigue, and practice. He finds that practice decreases variability and therefore improvability, discovers its limitation, and suggests best movement for writing.)

WRIGHT, W. R. "Some Effects of Incentives on Work and Fatigue," *Psychological Review*, Vol. XIII., pp. 23–34.

(One of the few experimental studies bearing on the arousing of initiative.)

WUNDT, W. "Physiological Psychology." (5th ed.) Leipsic, 1903.

(See Chapter XVIII., Vol. III., pp. 377–572.)

YERKES, R. M. "The Dancing Mouse." Macmillan, 1907.

YERKES, R. M. "Instincts, Habits, and Reactions of the Green Frog, *Psychological Review Monograph Supplement*, Vol. IV., pp. 579–597.

YERKES AND HUGGINS. "Habit-formation in the Crawfish," *Psychological Review Monograph Supplement*, Vol. IV., pp. 565–577.

(These three studies contain much that is suggestive of the working of the mind in habit-formation.)

For further bibliography, see Baldwin, "Dictionary of Philosophy and Psychology," Vol. III., pp. 1051–1052 (Macmillan, 1905); the *Psychological Bulletin*, Monroe, "Bibliography of Education," (Appleton, 1903), especially pp. 67–69, and bibliographies in connection with the contributions of Radestock (German edition), Kurtidis, Meyers, Kennedy, Reuther, and Jennings, for titles of which see above.

INDEX

Abilities, 32.
Abstractions, 18, 62.
Accommodation, 47, 53, 183, 204.
Accountant, 148.
Accuracy, 56, 236, 237, 257.
Action, 4, 11, 23, 36, 121.
Actual performance, 116–117.
Adams, J., 5.
Adaptation, 53, 61.
Adaptive instincts, 79.
Adjustment; 47, 62–63, 71, 82, 222.
Adolescence, 71.
Adolescent initiative, 152, 241.
Æsthetic appreciation, 77, 124, 127, 132.
Æsthetic emotion, 131.
Aims of teaching, 1–9, 61, 97.
Alcohol, 152.
Algebra, 100.
Altruism, 2.
Ambition, 77, 80, 126.
America, 41.
Analogy, 53, 60.
Analysis, 38, 53, 83, 93, 98, 101.
Andrews, B., 32, 35, 83, 128, 160.
Angell, J., 78, 175, 244.
Appeals to reason, 124, 151–152.
Application, limits of, 277.
Appreciations, 32.
Aristotle, 47, 239.
Arithmetic, 41, 85–86, 98, 100, 105–110, 151, 163, 168, 170, 182, 188, 197, 237, 265–267.
Artificial punishment, 195.
Artificial variation, 224.
Associating stimuli, 164, 219.
Associations, 164, 211, 213, 219, 222.
Attacking one habit at a time, 211–212.
Attention, 15, 30, 49, 56, 62–63, 87, 90–91, 100, 105, 113, 160, 170–172, 205, 211, 222, 223, 236, 244–245, 257.
Attitudes, 32.
Authority, 16, 17, 74.
Automatic learning, 13–25, 117.
Automatic preparation, 86.
Automatisms, 31, 38–39, 41, 46, 51, 63, 86, 183, 197.
Avoidance of inactivity and pain, 77.

Baby, babbling, 72; bowing, 70; creeping, 69; handling book, 70; reaching, 69; standing, 70; sucking thumb, 201; walking, 70.
Bad habits, 10, 200–201, 209; as lines of least resistance, 209; breaking, 200–234, origin of, 200–201.
Bagley, W., 30, 87, 89, 121, 160, 161, 165, 197, 243.
Bain, A., 34, 88, 92, 177.
Bair, J., 174.
Baldwin, J., 51, 56, 130, 134, 138, 183, 204.
Ball, 171, 197.
Baltimore, 41.
Barth, T., 92.
Basis of habit, 69–84.
Bawden, 175, 178.
Bees, 13.
Beliefs, 12.
Bicycle, 63–64.
Bolton, T., 175.
Bourdon, B., 175.
Breaking habits, 200–234.
Brooklyn Training School for Teachers, 285.
Bryan, W., 72, 174.
Butler, N., 138.

Calkins, M., 45.
Campe, 34.
Capabilities, unlearned, 13–17.
Carpentry, 127, 128.
Case of indecision, 72.
Cause and effect, 137.
Cautions, against lapse, 197–198.
Character-building, 7, 235.
Charts, 115, 269.
Checking of variations, 183–184.
Chemistry, 98, 273.
Child, exceptional, 3.
Child labor, 282.
Child-study, 2, 3, 82–83, 111, 115.
City schools, 96–97.
Civics, 270–272.
Classification, 74, 75, 79, 236; of feeling, 129–132; of instinct, 78–79; of interest, 136–139.
Clergyman, 168.
Cognition, 44–46, 49.
Collecting instinct, 75.
Combination, 21, 59, 81, 108, 208.
Common elements, 243–245.
Common method of procedure, 245–246.
Comparison, 111, 236.
Complex cases of analysis, 103–114.
Complexity, 59, 61, 237.
Composition, 112, 185, 190, 244, 262–264.
Conclusion, 277–284.
Concrete case of habit-breaking, 225–232.
Concrete demonstration, 114.
Concrete presentation, 114–115.
Concrete reminders, 192.
Concrete situation, 18.
Conduct, 12, 38, 58.
Confidence in success, 203, 205.
Confused forms of organization, 32.
Connecticut Committee Report on English, 41, 112.
Connecting initiative, 152.
Conscience, 196.
Constructive instinct, 75, 79, 216.
Cornman, O., 112.
Counter habits, 204.
Counter initiative, 214–215.
Counteracting of stimuli, 221.
Country schools, 96–97.
Courage, 77.
Courses of study, 40–41, 93, 95–97, 259.
Crampton, H., 166.
Creativity, 122.
Criterion for experience, 279.
Criticism, 108.
Curiosity, 75, 126, 135, 149.
Curtmann, W., 91–92, 203, 205–206.

Dancing, 101.
Dancing mice, 13.
Danger of lapse, 177–178.
Davis, W., 175.
Dearborn, W., 110, 174.
Decadence of habits, 166.
Deduction, 53.
De Garmo, C., 28, 134.
Demonstration of habits, 88, 93, 114–117, 226–227.
Description, 115.
Desirability of maximum practice, 173–174.
Development, 69–72, 122, 150–151, 222, 239, 243; of habit from instinct, 69–71; of habit from habit, 71–72; of motives, 150–151; of service, 239–243.
Dewey, J., 139.
Difference between ideas and habits, 38–67.
Difficulty, 38–40, 210, 213.
Direct interest, 140, 217.
Discipline, 41, 58, 65, 95, 149, 181, 235–256, 278.
Dissatisfaction, 144, 163, 217, 220.
Disuse, 80–82, 206–207.
Double reference of interest, 134–135.
Double use of initiative, 220.
Downey, J., 175.
Drawing, 41, 76, 96, 102–103, 145–146, 151, 171, 196, 269–270.
Drill, 37–39, 41, 65, 86, 116, 257–276.
Dumont, L., 90–91.
Dutton, S., 121.

EARHART, L., 103, 174.
EBBINGHAUS, H., 35, 167, 175.
EBERT, 175, 246.
Education, aim of, 2; definition of, 2; nature of, 1; teaching and, 2–3.
Effort, 169.
Egoistic emotions, 131.
EISENLOHR, 159.
Elimination of difficulties, 184.
ELIOT, C., 149–150, 212.
Emotional incentives, 128–146, 240.
Emotions, 11, 123, 147, 150, 217, 228.
Emphasis for breaking habits, 214.
Employment of gardener, 20–21.
Emulation, 77, 126, 216.
England, 41.
English, 41, 185, 247, 248.
Environment, 3–4, 59, 73, 195; and practice, 164–165, and teacher, 4, 22.
Ethical appreciation, 77; emotion, 131.
Ethics, 2, 17.
Evoking initiative, 120–158.
Exceptional children, 3.
Exceptions, preventing, 87, 93, 177–199, 214, 224, 230–232, 242, 267, 278.
Excitation, 47.
EXNER, S., 175.
Experience, 5, 13–45; meaning of, 10–13; organized, 27–43; organizing, 10–26.
Experiment, 36, 54, 170, 174.
Experimental pedagogy, 283.
Experimental psychology, 109–110, 174, 279, 283.
Experimentation, 8, 39, 104, 182, 279; for initiative, 144–145.

Failure, 205, 214.
Familiarity, 35.
Fatigue, 56–57, 181, 183.
Fear, 78, 82, 124–126, 216.
Feeling, 12, 18, 121, 123, 128, 132.
Feelings, 11, 60, 123, 132.
FINDLAY, J., 33.
First lapse, 189.
Flag, 127.
Focalization, 87, 90.
Formal discipline, 58, 243–250.
Formal steps, 93, 285.
Formalism, 65.
Formulations of the habit-getting process, 87–92.
FRACKER, G., 175.
Frame of mind, 88–89.
French, 184, 209, 273.
Frequency, 88.
Function, 48, 49; of automatic tendencies, 37; of habit, 36, 53, 200; of idea, 53; of teacher, 5.
Furnishing stimuli, 163.

General habits, 243–250.
General method, 33, 65.
General notion, 7, 18, 28, 31.
German, 173, 188, 247, 273.
Gilbert, 175.
Golf, 19–21, 249, 281.
Grammar, 41, 112, 163, 202.
Greek, 169.
GROOS, K., 75.
Groups, 137.
Growth, 5.
Guarding against exceptions, 87.
Guarding against temptations, 187–188.
Guess, 188.

Habit, 5, 31, 37–39, 44–67; an automatism, 51, 62, 99; breaking of, 200–234; definition of, 46–48; disregards detail and feeling, 54–55, 62, 100; function of, 36, 53; implies repetition, 57; minimizes attention and fatigue, 56, 62; nature of, 45–46; preservative nature of, 53, 62, 99; reflex and instinctive basis of, 59–60, 62; serial, 52, 62, 99; specific, 57–58, 62.
Habit-forming subjects, 260.
Habits, bad, 10, 200–201, 209; counter, 204; involved in moral training, 236, 239; substitute habits, 210; unconsciously formed, 205.
Habituation, 53, 61, 204, 222.

Hall, G., 152.
Harmonies, 139.
Harris, W., 51.
Harter, 72.
Haskell, E., 75.
Herbart, J., 28, 54, 59, 60, 92, 132, 138.
High school subjects, 272.
Hinsdale, B., 248.
History, 100, 151, 188, 237, 257, 260, 270, 272.
Hit-or-miss method, 3.
Höffding, H., 45.
Home, 3, 164, 201.
Honesty, 180.
Horne, H., 89, 202, 209.
Huey, E., 110.
Humanities, 136–139.
Hunting instinct, 82.
Hyde, W., 239.

Idea-complex, 45.
Idea-habits, 39–40, 52, 55, 117.
Idea-mass, 45, 48, 55.
Ideas, 5, 11, 18, 30, 31, 37–39, 44–67; and habits, 44–67; definition of, 44–45, 50; of habits, 41.
Ideals, 151, 217, 247, 250.
Ideation, 45.
Imagination, 15, 17, 23, 31, 59, 179. 183, 193, 246.
Imitation, 74–75, 87, 201, 216.
Impulse, 35, 73, 147, 155.
Incentive, 120–158.
Incidental practice, 98.
Inclination, 35.
Independence, 77.
Indianapolis, 41.
Indirect interest, 140, 149, 217.
Individual cases, 225.
Individualistic instincts, 79.
Information, 6.
Informational subjects, 260.
Inhibition, 21, 148, 185–198, 208–209, 214–218.
Initiative, 87, 93, 120–158, 161, 167–168, 178, 180, 191, 196–197, 212, 213, 215, 218, 220, 227–228, 240–242, 256, 266, 271, 278; double use of, 220; reënforcement of, 145–146, 180–181; renewing of, 167; sources of, 121, 122; testing, 146.
Instinct, 59–60, 62, 69–84, 87, 121–128, 227–228, 240; and feeling, 123; and motive, 123; classification of, 78–79, 123; defined, 73; duration of, 79–80, nature of, 73; overlapping, 78–79, 123.
Instinctive basis of habit, 59–60, 69–84.
Instruction, 33, 65.
Intellectual emotions, 131.
Intensity, 88, 90, 128.
Interest, 30, 124, 132–141, 147, 160, 162, 217, 271.
Interpretation, 108, 236.
Interruption of reaction, 207.
Intoxicants, 211.
Invariability in repetition, 37.
Investigation, 201.

James, W., 34, 56, 73, 74, 78, 88, 92, 161, 166, 178, 201.
Jennings, C., 72.
Johnson, W., 72, 171, 175.
Jost, A., 167, 175.
Judd, C., 72, 99, 174, 175, 249.
Judgment, 225.
Judicious plying of initiative, 153.

Keeping in practice, 165–166.
Kennedy, F., 175.
Keyboard, 125.
Kindergarten, 75.
Kirkpatrick, E., 78, 79.
Knack, 56.
Knowledge, 1–9, 24, 28, 38, 40, 60, 75, 97.
Kussmaul, A., 47.

Ladd, G., 47, 74.
Lapses, 177–199.
Latin, 98, 169, 247.
Lauder-Brunton, 201.
Learning, 13–25, 64; automatic and purposive intermingled, 19.
Lesson, 38, 97, 98, 101, 102.
Lesson period, 278.

Lesson study, 103–105.
Levels of interest, 136–139.
LINDNER, T., 50.
List, of emotions, 131; of instincts, 74, 125; of disciplinary and moral habits, 236, 239.
LOCKE, J., 45.
Lockstep, 23.
Love, 76, 126.

MACE, W., 259.
MAHER, 46.
MAJOR, D., 72.
Man, interest in, 136–139.
Manipulation, 76, 108, 207.
Manual training, 75, 127, 128, 151, 191, 269–270.
Many-sided interest, 132.
Mathematics, 100, 170, 200. *See* Arithmetic.
McMURRY, C. and F., 28, 35.
MEIKLEJOHN, A., 245.
Method-form, 285.
Methodology, of habit, 33, 35, 63, 87, 177; of ideas, 32, 63.
Methods, 37, 40, 41.
MEUMANN, E., 175–246.
Misconceptions of functions, of habit, 200; of interest, 134.
Mistake of modern pedagogy, 8.
Modern pedagogy, 8.
Modes of organising experience, 10–26.
Modification, method of, 36, 70–71, 80–82, 133, 179, 207.
Moral training, 3, 95, 235–236.
MORGAN, C., 72.
Motives, 123–124, 146–151, 191, 214, 215–217, 228, 241.
MUELLER, G., 175.
Multiplicity of association, 37.
Music, 132, 144–145, 166, 180, 184, 267–269.

Nagging, 197.
Natural punishment, 195; natural science, 270; natural variation, 224.
Nature, 195, 200, 204; interest in, 136–139; study, 96, 137.
Neatness, 165, 184, 236.
Negative, incentives, 155; initiative, 190–192, 215–216; teaching, 23.
Neglect of automatic, 23.
NETSCHAJEFF, A., 175.
Neurone, 57–58, 60.
New Haven, 41.
New York, 41.
NIEMEYER, A., 206.

Obedience, 180, 236, 251.
Objection, philosophical, 48; psychological, 49.
Objective reference, 134.
Observation, 104, 257, 285.
Obstruction of stimuli, 221.
Opposing stimuli, 181–187.
Order, habit of, 89, 105, 152, 193, 236, 237, 251.
Organized experience, 27–43.
Organizing experience, mode of, 9–26; automatic ways of, 17.
Organization, 1–9, 15, 30, 50, 109.
Origin of bad habits, 200–201.
Originality, 61.
O'SHEA, M., 72.
OSTERMANN, W., 134.
Over-habituation, 280–282.
Over-practice, 171.
Ownership, 75–76.

Painful experiences, 194.
Painting, 76, 96.
Parent, 74, 153, 180, 202, 213.
Parental instincts, 79.
Past experience, 115–116.
Pedagogue, 44, 48, 49, 147, 174.
Pedagogy, 8, 174, 280, 283.
Pedantry, 273.
Penmanship, 22, 71, 100, 126, 168, 180, 184, 264–265.
PEREZ, B., 82.
Perfection-theory, of ethics, 2.
Performance, 104.
Perfunctory practice, 90.
Permanent feeling, 134.
Permanent interest, 134, 135.
Permanent motive, 149–150.
PERRY, Commodore, 99.

Personality, 139.
Phases, of habit-forming, 85–94; use of word, 93.
Philosopher's objection, 48.
Physical culture, 151, 281.
Physics, 105–106, 273.
Piano, 116, 172, 185, 190, 193, 208.
Pictures, 115.
Picturing painful consequences, 193.
Pillsbury, W., 134, 245, 246.
Plato, 28, 59.
Play, 75, 79, 82, 126, 201, 216.
Positive initiative, 155, 190–192, 215.
Posture, 101–102, 126, 220, 236.
Practice, 40–41, 87, 90, 93, 116, 159–176, 220–221, 223, 229, 242, 251, 262, 278; actual, 167–174; earnest, 169–170; in environment, 164–165; perfunctory, 167; thoughtful, 161.
Prayer, 192.
Prejudice, 59.
Preliminary action, 85–86.
Preliminary mastery of difficult points, 116.
Preparation, automatic, 86–87.
Preventing exceptions, 87, 93, 177–199, 214, 224, 230–232, 242, 267, 278.
Preyer, W., 82, 138.
Pride, 77, 149, 150.
Primitive child, 3.
Principles, general, 21, 24–25, 38–39, 50, 61–63, 70–71, 79–82, 104–106, 114–117, 140, 144–146, 148, 154, 162–166, 167–174, 179–185, 187–198, 211, 212, 218, 243, 245, 246, 249–250, 277–278; in selecting habits, 104–106; in demonstrating, 114–117; in getting initiative, 144–146; in practice, 162–166, 167–174; in preventing exceptions, 179–185, 187–198. *See* also summaries of chapters.
Problem, 1–9, 38, 97, 202; arithmetic, 106–110; of discipline, 38; the teacher's, 1–9, 97.
Progress, 7.
Propensity, 35, 56.
Protracted habit-formation, 250–253.
Proverbs, 192.
Psychological objection, 49.
Psychologist, 44–45, 58, 60, 101, 146, 279.
Psychology, 36, 60, 65, 110, 121, 174, 277, 279, 282.
Pugnacity, 78, 126, 216.
Punctuality, 129, 193, 236–237.
Punishment, 195, 225, 235.
Purposes, 148.
Purposive learning, 13–25.

Radestock, P., 46, 280.
Reaction, 30, 47, 51, 56, 59–60, 70, 73, 85–87, 111–117, 148, 172, 206, 213, 219, 223–224.
Reading, 109–110, 207, 208, 261–262.
Reality, 48, 139.
Reason, 17, 124.
Reasoning, 59.
Recency, 88.
Reciprocal interference, 249.
Reduction of stimuli, 182.
Reënforcements of initiative, 145–146, 180–181.
Reflex activity, 62.
Reflex basis of habit, 59–60.
Regulative instincts, 79.
Reid, T., 35.
Relation of breaking and forming habits, 202–204, 214–215.
Relegation to teacher, 3.
Religion, 138.
Religious teaching, 23, 24.
Religious training, 3, 16, 17, 213.
Reminders, concrete, 192.
Removal of stimuli, 181, 204, 206; of sources of exception, 279–285.
Renewal of initiative, 167.
Repetition, 41, 62, 87, 94, 100, 159–176, 189, 197, 214–215, 257–276.
Resolving against lapses, 190.
Response, 47, 53, 73, 87.
"Resultant instincts," 79.

Resulting satisfaction, 70, 89, 141–146, 181, 197, 217, 228.
Reuther, F., 175.
Riis, J., 185.
Rousseau, J., 46.
Rowe, S., 78, 122, 164, 201.
Royce, J., 121.

Sage, R., 59.
Satisfaction, 16, 17, 34, 36, 70, 116, 135, 144–146, 182, 206, 217, 220.
School, 39, 58, 127, 150, 165, 181, 202, 236, 250–251; discipline, 235–256; habits, 236, 250–251; room, 181.
Scientific scheme, 253.
Scientific study of habit-formation, 282–283.
Seeley, L., 85.
Selection, 81, 87–88, 96–97, 204, 208; of habits, 95–114.
Self-activity, 122.
Self-criticism, 196, 267.
Self-expression, 122, 201.
Self-testing, 196.
Sensation, 44–45.
Sense experience, 17, 59.
Service, 1, 2, 19, 236, 239–243.
Sewing, 151, 187.
Sherrington, C., 208.
Shinn, M., 72, 82.
Shuffling gait, habits of, 239–243.
Singing, 145, 170, 267–269.
Situations, 5, 16, 18, 70, 80, 87, 89, 93, 202, 216, 238.
Skill, 1, 6, 19, 24, 30, 33, 258.
Smith, W., 175.
Sociability, 76.
Social instincts, 79; emotions, 131.
Sources, of initiative, 121–122; of exceptions, 178–179.
Specific nature of habit, 57–58, 62, 238.
Specified number of repetitions, 163.
Specified periods of practice, 162.
Speech, 72, 76, 181.
Spelling, 41, 111, 114, 187–188, 237.
Spencer, H., 28.
Spontaneity, 47.
Standards, 148, 218.
Stein, G., 175.
Stimulation, 47, 178, 206, 222.
Stimuli, 81–82, 85–87, 110–114, 136; 163–164, 181, 183, 185–189, 204, 213, 216, 219, 221, 222; to exceptions, 182; reduction of, 182; removal of, 81–82, 204, 206.
Stimulus, 47, 53, 54, 73, 179, 206.
Stone, C., 174, 265.
Stout, G., 35, 46.
Street-car problem, 107.
Study, habits of, 165, 236; of habits, 103–114, 179–180, 222.
Stuttering, 212.
Subdivisions of habit-forming, 93.
Subject-matter, 38–39, 41, 95–98, 257–276.
Substitute habits, 210, 212, 217, 221.
Substitution, 82, 212.
Suggestion, 57–58, 146, 189, 246–248, 250, 253.
Swift, E., 144, 170, 174, 182.
Swimming, 104, 173.
Sympathy, 76.
Synthesis, 53.

Talking, 64.
Tanner, A., 134.
Tarde, G., 75.
Teacher, 153, 180, 190, 202, 203; and environment, 4; and general training, 249–250; and organization, 1–9; function of, 22; problem of, 1–9; to study habit, 103–114; relegation of work to, 3.
Teaching, 4, 24, 25, 37–38; and automatisms, 37; and educating, 4; definition of, 4; formal, 25; fundamental, 37; negative, 23; scientific, 38.

Temptation, 23, 187, 211.
Tennis, 36, 105, 171, 246, 249.
Testing and weighing initiative, 146.
Thorndike, E., 71, 88, 120, 136, 142, 171, 175, 243, 244.
Thoughts, 12, 121.
Thrift, 76.

TOMPKINS, A., 2.
TRACY, F., 83.
Training, 41, 47. *See* Manual, Moral, Religious.
Transition of ideas into habits, 40.
Translation, 169, 191.
Trying suggested combinations, 108–109.
Types, of automatic learning, 15–17; of organized experience, 27–43.

Unconscious repetition, 272–273.
Unconsciously formed habits, 205.
Undesirable habits, 212–213.
Unfamiliarity, 113.
Unlearned capabilities, 13–17.
Usefulness of classification of interest, 139–140.

Validated impulses, 147.
Variation, 53, 71, 86, 170, 183, 187, 189, 196, 204–205, 214, 221–225, 246–248; checking of, 183–184.
Variety of child's experience, 27–32.
Verbal distinction, interest, 133–134.
Verification, 108, 111, 257.
VOGT, R., 175.
VOLKMAN, 175.

WALKING, 64.
Warning against tendencies, 189.
WASHBURN, A., 72.
Weakening of stimuli, 182.
Whistling, 115.
WHITE, E., 121.
Will, 46, 218.
Willing, 30, 223.
WINCH, W., 175.
WOODWORTH, R., 170, 171, 175.
Writing, 22, 71, 100, 126, 163, 164, 165, 166, 168–169, 171–172, 178, 184, 264–265.

YERKES, R., 13, 72.

The Lighting of Schoolrooms

A Manual for School Boards, Architects, Superintendents, and Teachers

BY

STUART H. ROWE, PH.D.

HEAD OF THE DEPARTMENT OF PSYCHOLOGY AND PRINCIPLES OF EDUCATION, BROOKLYN TRAINING SCHOOL FOR TEACHERS, BROOKLYN, NEW YORK; LECTURER ON EDUCATIONAL PSYCHOLOGY, ADELPHI COLLEGE, BROOKLYN, NEW YORK

Cloth, 12mo, 32 Illustrations. Price, $1.00 net

". . . No superintendent, principal, teacher, or architect should fail to read this book . . . ; it is a handbook that every member of a board of education that belongs to the building committee should not only read, but carry around in his pocket to study. The author has rendered a real helpful service in preparing this volume in the interest of the children now in school, and of future generations. It heads the list, and it will not be improved upon in many a year." — *Educational Review.*

". . . It is the broad purpose of this handy little volume to present the principles on which the lighting of a school-building depends. . . . The book is preëminently a valuable guide not merely to school boards, superintendents, inspectors, and architects, but also to teachers, upon whose shoulders falls the responsibility of guarding carefully the health of the young children under their care. . . ." — *School Journal.*

". . . A valuable contribution to the subject of schoolroom lighting. . . . The subject is treated, not only from the architect's point of view, but also from the standpoint of the officer's and the teacher's duty in attaining desired results. While the book aims to be a manual only, it covers in a most compact and yet complete form all that should and can profitably be known on the subject." — *School Board Journal.*

THE LIGHTING OF SCHOOLROOMS — *Continued*

". . . It is complete, reliable, and usable by any maker of schoolhouses. It is a good protection for school boards against incompetent or cranky architects." — *Journal of Education.*

". . . For the guidance of school boards, architects, superintendents, and teachers a very useful manual. . . . The book is carefully indexed; a bibliography of some twenty-five works dealing with school architecture, hygiene, and sanitation is appended, and also a list of the various kinds of window material, with the name and address of the manufacturers. There are numerous illustrations from photographs and drawings." — *The Churchman.*

". . . Should be read by all who have the construction and planning of schoolrooms. The numerous good plans and illustrations give a clear idea not only of model buildings, but of methods, such as the use of prism glass, by which the disadvantages of poor location can be remedied." — *The Independent.*

NEW YORK: LONGMANS, GREEN & CO.

By the Same Author

The Physical Nature of the Child
AND HOW TO STUDY IT

Cloth *12mo* *90 cents net*

"The volume should find a place in the library of every teacher, and is so sensible, so clear, and so succinct that even the parent whose children are a disagreeable interruption to the business or pleasure of life will be tempted to read it, and having once read it, can scarcely be so fatuous as to return to his former attitude of self-complacent carelessness." — *New York Times.*

NEW YORK: THE MACMILLAN COMPANY

This book may be kept

FOURTEEN DAYS

from last date stamped below. A fine of TWO CENTS will be charged for each day the book is kept over time.

7Ja'27			
14 .11'30			
10Ja'31			
10Jl'36			

Educ 2019.09.5.2
Habit-formation and the science of
Widener Library 003068410
3 2044 079 713 426